



Third West Weekly Report Shepherd, Michael to:

Joyce Ackerman, 'Craig Barnitz (cbamitz@utah.gov)' 10/26/2011 08:32 AM

Hide Details

From: "Shepherd, Michael" < Michael. Shepherd@PacifiCorp.com>

To: Joyce Ackerman/R8/USEPA/US@EPA, "'Craig Bamitz (cbamitz@utah.gov)'" <cbamitz@utah.gov>

History: This message has been replied to.

## 9 Attachments



Weekly Reports 10-17-11 to 10-22-11.pdf Third West FCR Weekly Log - 2011.42.pdf 222689-1.pdf 222690-1.pdf



Joyce & Craig,

Attached are the reports for the week of October 17, 2011.

All air monitoring results came back negative.

To follow up from last week's question, we have been monitoring at four points around the exclusion zone plus two more points around the non-exclusion zone perimeter, six total each day. We also have been monitoring on the weekends for a few weeks now. Thus far we have only seen three isolated chrysotile hits. We discussed at the conception of this project that once we establish a base of air monitor results that are favorable that we could reduce the number of air monitors to four points around the site perimeter and stop monitoring on the weekends. I would like to start this approach this week. Have you had a chance to discuss this?

## Sincerely,

Mike Shepherd
Project Manager
Rocky Mountain Power - Major Projects
801.220.4584 Office
801.631.1310 Cell
801.220.2797 Fax
michael.shepherd@pacificorp.com



October 26, 2011

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 223071-1 None Given

Project Description:

3rd West Sub-PacifiCorp

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 223071-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

## RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

## TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 223071-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

3rd West Sub- PacifiCorp

**Date Samples Received:** 

October 25, 2011

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

October 25, 2011

Client ID Number	Lab ID N	umber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-102211-N	EM	814331	0.1100	780	ND	0.0045	BAS	BAS
3W-102211-S	EM	81433 <b>2</b>	0.1100	780	ND	0.0045	BAS	BAS
3W-102211-E	EM	814333	0.1100	780	. ND	0.0045	BAS	BAS
3W-102211-W	EM	814334	0.1100	780	ND	0.0045	BAS	BAS
Blank	EM	814335	NA	0	NA			
Blank	· EM	814336	NA	0	· NA			

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity
Average Grid Opening in mm<sup>2</sup> = 0.011

Effective Filter Area = 385 sq mm

DATA QA



Project: 3rd W	/est Sub Station	Date: 10/17/11  Job Number:						
Location:	3rd West, 1st South, SLC							
Survey Conducted By: Craig Ford			Title:					
		In Compliance	Out of Compliance	N/A	Corrective Action Taken and			
Standard	Title	$\Box$		$\Box$	Date .			
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x				
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	·			
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x						
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.		Ć	x				
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.			x				
1006 100 (2)	Head protection, where there is a possible	х						

Standard	Title	☐ In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
1926.652 (a)	Excavation protective systems; examination by competent person when less than 5 feet in depth.	]		x	Dute
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	x			
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			х	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			<b>x</b> .	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			х	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	·
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title	$\Box$	$\Box$	$\Box$	Date
1926.451 (a)	Scaffolding shall have guardrails and toeboards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	·
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			X	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.	x			
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			х	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	х			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			x	·
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.			x	
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			x	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	

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		In Compliance	Out of Compliance,	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			х	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			,
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

## Comments:

Newman excavating to a depth of approximately 6-8 feet for footings in the Southeast section of the site. Excavated soil loaded on 2 dump trucks for off-site storage.

CVE continued with building forms and placing building materials for the new building on the North end of the site.

No active exclusion zone.





# 3<sup>RR</sup> WEST SUBSTATION REMEDIATION PROJECT **HEALTH SAFETY MANAGER (HSM)**

	DAILY CHECKLIST
DATE:	10/17/11
General	
	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
11/A	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior
	to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable
NADocu	iment required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with
	contaminated material.
. <b>NA</b>	Confirm return of waste material manifest documents for each load with site
	manager.
NA	Complete all CSHASP Forms (for applicable activities planned for that day)
NA	Illness/Injury Report Form A
NA	Site-Specific Training Record Form C
NA	Hot Work Permit Form D
NA	Trench/Evacuation Permit Form E
NA	Combined Space Entry Permit From F
NA	Exclusion zone operations are practiced as instructed.
	NA Decontamination unit is working properly.
	NA Workers are using decontamination unit as instructed.
	NA Workers use personal protective equipment properly.
	Set air samples at cardinal compass points around exclusion zone. Check
	throughout the day to ensure proper operation.
$\square$	Observe control measures for dust and fugitive materials i.e. watering excavation sites and
	track out prevention.
$\overline{\square}$	Review sign-in/sign-out log throughout and at the end of the workday.
$\square$	Secure the site at the end of the workday; PacifiCorp Employee
<u>Samplin</u>	g
NA	Soil Confirmation sampling for any newly excavated areas
NA	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
	exclusions zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil
	removal .
NA	Digitally photograph each sample location and at any place field sampling personnel determined necessary





NA Electronically file photo files into the on-site database ablaComplete Field Documentation Field Sample Data Sheets (FSDS)  $\checkmark$  $\checkmark$ Logbook NA On-site computer database  $\checkmark$ Label each sample media with a unique number  $\checkmark$ Seal sample(s) in zip lock plastic bags Complete and include Chain of Custody (COC) Form required for shipping of samples to ablaappropriate laboratory Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples NA Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees NA Electronically file sample reports into on-site database



Project: 3rd West Sub Station  Location: 3rd West, 1st South, SLC  Survey Conducted By: Jon Craig			Date: 10/18/11					
		Job Number:						
			Title:					
٠		In Compliance	Out of Compliance	N/A	Correct <i>ive Ac</i> tion <b>Tak</b> en <b>a</b> nd			
Standard	Title				<b>Da</b> te			
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x				
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x				
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	<b>x</b>						
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x				
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.			x				
1926 100 (2)	Head protection, where there is a possible	x						

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	х			
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			х	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, l'adder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			x	·
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			х	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.			х	

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		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard.	Title	□			Date
1926.451 (a)	Scaffolding shall have guardrails and toeboards when more than 10 feet high and when less than 45 inches of work space.			x .	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			<b>x</b> ·	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.	x			
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.		-	х	
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	х			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			х	
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	1		х	
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	,
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	Section 1		x	·
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title .				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	·
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x		i	
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

## Comments:

Newman excavating to a depth of approximately 6-8 feet for footings in the Southeast section of the site. Excavated soil loaded on 2 dump trucks for off-site storage.

CVE continued with building forms and placing building materials for the new building on the North end of the site.

No active exclusion zone.



determined necessary



# 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

# **HEALTH SAFETY MANAGER (HSM)**

	<u>DAILY CHECKLIST</u>
DATE:	10/18/11
Caman	
<u>Gener</u> ☑	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
INA	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable
NADo	cument required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with
	contaminated material.
NA	Confirm return of waste material manifest documents for each load with site manager.
NA	Complete all CSHASP Forms (for applicable activities planned for that day)
NA	Illness/Injury Report Form A
NA	Site-Specific Training Record Form C
NA	Hot Work Permit Form D
NA	Trench/Evacuation Permit Form E
NA	Combined Space Entry Permit From F
NA	Exclusion zone operations are practiced as instructed.
	NA Decontamination unit is working properly.
	NA Workers are using decontamination unit as instructed.
	NA Workers use personal protective equipment properly.
Ø	Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
<b>7</b>	Observe control measures for dust and fugitive materials i.e. watering excavation sites and
<b>V</b>	track out prevention.
$\square$	Review sign-in/sign-out log throughout and at the end of the workday.
Ø	Secure the site at the end of the workday; PacifiCorp Employee
Sampl	<u>ing</u>
NA	Soil Confirmation sampling for any newly excavated areas
NA	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
	exclusions zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA	Digitally photograph each sample location and at any place field sampling personnel





NA	Electronically file photo files into the on-site database
$\overline{\mathcal{Q}}$	Complete Field Documentation
	Field Sample Data Sheets (FSDS)
	Logbook
NA	On-site computer database
	Label each sample media with a unique number
	Seal sample(s) in zip lock plastic bags
$\square$	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
$\square$	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
NA	Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
NA	Electronically file sample reports into on-site database



Project: 3 <sup>rd</sup> West Sub Station			υ	ate:	10/ 19/ 11
Location:	3 <sup>rd</sup> West, 1 <sup>st</sup> South, SLC		Jo	b <b>N</b> u	ımber:
Survey Cond	ucted By: Jon Craig		T	itle:	
		In Compliance	Out of Compliance	N/A	
St <i>an</i> dard	Title		no 🗆		Corrective Action Taken and Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			х	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x	;		

,		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	<i>Tit</i> le				Date
1926.652 (a) .	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	x		·	
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			Х	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	<b>D</b> ebris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			X	-
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			х	
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1926.403 (b)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.			x ·	

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Standard	Title .			$\Box$	Date
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1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.	x			
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			х	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			-
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	

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Standard	Title	$\Box$			Date
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1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			x	
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.			x	
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	х	•		
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			х	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	

	•	In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title	$\Box$			Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			х	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			х	
1926.550 (b)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

## Comments:

Newman excavating to a depth of approximately 6-8 feet for footings in the Southeast section of the site. Excavated soil loaded on 2 dump trucks for off-site storage.

CVE continued with building forms and placing building materials for the new building on the North end of the site.

No active exclusion zone.





# 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT HEALTH SAFETY MANAGER (HSM)

	DAILY CHECKLIST
DATE:	10/19/11
<b>C</b> 1	
<u>General</u>	W. d Harlth and Caffee Inspection
<b>☑</b>	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable
NADocun	nent required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA	Confirm return of waste material manifest documents for each load with site manager.
NA	Complete all CSHASP Forms (for applicable activities planned for that day)
NA NA	Illness/Injury Report Form A
NA NA	Site-Specific Training Record Form C
NA NA	Hot Work Permit Form D
NA NA	Trench/Evacuation Permit Form E
NA NA	Combined Space Entry Permit From F
NA NA	Exclusion zone operations are practiced as instructed.
IVA.	NA Decontamination unit is working properly.
	NA Workers are using decontamination unit as instructed.
	NA Workers use personal protective equipment properly.
☑	Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
$\overline{\mathbf{Z}}$	Observe control measures for dust and fugitive materials i.e. watering excavation sites and
<b>-7</b>	track out prevention.
Ø	Review sign-in/sign-out log throughout and at the end of the workday.
	Secure the site at the end of the workday; PacifiCorp Employee
Sampling	
NA	Soil Confirmation sampling for any newly excavated areas
NA	Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusions zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA	Digitally photograph each sample location and at any place field sampling personnel





NA	Electronically file photo files into the on-site database
	Complete Field Documentation
$\square$	Field Sample Data Sheets (FSDS)
$\square$	Logbook
NA	On-site computer database
	Label each sample media with a unique number
	Seal sample(s) in zip lock plastic bags
$\square$	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
NA	Review and disseminate sample results as received from the laboratories to Project
	Manager and other appropriate managers and employees
NA	Electronically file sample reports into on-site database



Project: 3rd West Sub Station			Date: 10/14/11				
Location:	3rd West, 1st South, SLC	Job Number:					
Survey Cond	ucted By: _Justin Kargis	Title:					
		In Compliance	Out of Compliance	N/A	Corrective Action Taken and		
Standard	Title				Date		
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	·.		
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	. *		
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x					
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x			
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.			x			
1926 100 (2)	Head protection, where there is a possible	x					

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	x			
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			х	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	<b>D</b> ebris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			х	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	<i>Tit</i> le				Date
1926.451 (a) (4)	Scaffolding shall have guardrails and toeboards when more than 10 feet high and when less than 45 inches of work space.			x	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			x	
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	

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		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title ·			<i>E</i> 3	Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	х			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	·
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			x	
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.			x	
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	х			
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			x	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title .				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			х	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	х			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.		٠	х	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	·

### **Comments:**

Newman continued excavation and material removal in S. E. zone.

CVE fabricators continued setting wall forms for transformer building in zone 1.

People on the roof of the precision printing building were covering swamp coolers during the day.

Craig from Ut. DEQ called to check in on site progress. .

HAZWOPER class testing concluded, 4 CVE fabricators given stickers.





## 3<sup>RR</sup> WEST SUBSTATION REMEDIATION PROJECT

# **HEALTH SAFETY MANAGER (HSM)**

	<u>DAILY CHECKLIST</u>
DATE:	10/20/11
General	
	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for ail employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable
NA	Document required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
	Confirm return of waste material manifest documents for each load with site manager.
NA Comp	plete all CSHASP Forms (for applicable activities planned for that day)
NA .	Illness/Injury Report Form A
NA	Site-Specific Training Record Form C
NA	Hot Work Permit Form D
NA	Trench/Evacuation Permit Form E
NA	Combined Space Entry Permit From F
NA	Exclusion zone operations are practiced as instructed.
	NA Decontamination unit is working properly.
	NA Workers are using decontamination unit as instructed.
	NA Workers use personal protective equipment properly.
	Set air samples at cardinal compass points around exclusion zone. Check
-	throughout the day to ensure proper operation.
	Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
<u> </u>	Review sign-in/sign-out log throughout and at the end of the workday.  Secure the site at the end of the workday
Sampling	
NA Soil ( ☑	Confirmation sampling for any newly excavated areas  Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusions zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA ·	Digitally photograph each sample location and at any place field sampling personnel determined necessary





NA	Electronically file photo files into the on-site database
	Complete Field Documentation
	Field Sample Data Sheets (FSDS)
	Logbook
NA	On-site computer database
<b>☑</b>	Label each sample media with a unique number
	Seal sample(s) in zip lock plastic bags
<b>7</b>	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental
•	Samples
NA	Review and disseminate sample results as received from the laboratories to Project
	Manager and other appropriate managers and employees
NA	Electronically file sample reports into on-site database



Project: 3 <sup>rd</sup> West Sub Station  Location: 3 <sup>rd</sup> West, 1 <sup>st</sup> South, SLC  Survey Conducted By: Justin Kargis			Date: 10/21/11					
			Job Number:					
			Title:					
		In Compliance	Out of Compliance	. N/A	Correct <i>ive A</i> ction Taken and			
Standard	Title			□	Date			
1926.59	Hazard Communication <b>P</b> rogram, List of Chemicals, Training, MSDSs.			x				
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х				
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x						
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	,			
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.			x				
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x						

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title			□	Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	x			
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			x	·
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	<b>D</b> ebris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	·
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	x			

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		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title			$\Box$	Date
1926.451 (a)	Scaffolding shall have guardrails and toeboards when more than 10 feet high and when less than 45 inches of work space.			x	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	·
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	×			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			<b>X</b>	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			x	
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.			x	
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	·		x	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

		] In Compliance	Out of Compliance	] N/A	Corrective Action Taken and
Standard	Title				<i>Da</i> te
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			х	
1926.550 (b)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.		:	х	

### **Comments:**

Newman continued excavation and material removal in S. E. zone, ended work day around 1 pm.

CVE fabricators poured walls for transformer building.

Kayli with Wilding came by in the morning to update the SWPPP.



determined necessary



# 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT **HEALTH SAFETY MANAGER (HSM)**

			DAILY CHECKLIST
)A	TE	:	10/21/11
	Ca	mamal	
		<u>neral</u>	Work area Health and Safety Inspection
	NA		Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
	ил	<b>.</b>	activities for the day
	NA		Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior
		•	to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
	NA		Site hazard and safety instruction for all first time employees, contractors or visitors
	NA		Complete Employee Meeting Record Form B (where applicable
٠	NA		Document required Respirator Training completion with Form H
NA		•	Record times and numbers of dump trucks and trailers as they leave the site with
			contaminated material.
<b>7</b>			Confirm return of waste material manifest documents for each load with site
		,	manager.
NA		Compl	ete all CSHASP Forms (for applicable activities planned for that day)
		NA	Illness/Injury Report Form A
		NA	Site-Specific Training Record Form C
		NA	Hot Work Permit Form D
		NA	Trench/Evacuation Permit Form E
		NA	Combined Space Entry Permit From F
		NA	Exclusion zone operations are practiced as instructed.
			NA Decontamination unit is working properly.
			NA Workers are using decontamination unit as instructed.
			NA Workers use personal protective equipment properly.
	☑		Set air samples at cardinal compass points around exclusion zone. Check
			throughout the day to ensure proper operation.
			Observe control measures for dust and fugitive materials i.e. watering excavation sites and
	-7		track out prevention.
	Image: Control of the con		Review sign-in/sign-out log throughout and at the end of the workday.  Secure the site at the end of the workday
	Sai	mpling	
NA	٠.	Soil C	onfirmation sampling for any newly excavated areas
<b>⊿</b>			Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusions zone
	NA	<b>\</b>	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
	NA	<b>\</b>	Digitally photograph each sample location and at any place field sampling personnel





NA	Electronically file photo files into the on-site database
	Complete Field Documentation
	Field Sample Data Sheets (FSDS)
	Logbook
NA ·	On-site computer database
	Label each sample media with a unique number
	Seal sample(s) in zip lock plastic bags
$\square$	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
$\square$	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
NA	Review and disseminate sample results as received from the laboratories to Project
	Manager and other appropriate managers and employees
NA	Electronically file sample reports into on-site database



## 3<sup>rd</sup> West Substation Site Project Safety Audit

Project: 3rd West Sub Station			Date: 10/22/11			
Location:	3rd West, 1st South, SLC		Jo	b Nu	mber:	
Survey Condo	ucted By: Jon Craig	Title:				
		In Compliance	Out of Compliance	N/A	Corrective Action Taken and	
Standard	<i>Ti</i> tle				D <b>a</b> te	
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x		
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x		
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x				
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x		
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.			x		
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x				

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	x			
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	·
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			x .	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.		•	x	
1926.25 (a)	<b>D</b> ebris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	•
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.			x ·	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (4)	Scaffolding shall have guardrails and toeboards when more than 10 feet high and when less than 45 inches of work space.		j	x	•
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	<b>x</b> .			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.	х			
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			x	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	

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		In Compliance	Out of Compliance	N/A	Corrective Action Taken
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			x	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			x	
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.			x	
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			х	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	<i>Tit</i> le		$\Box$		Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	l .		х	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			х	,
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

### Comments:

 $\label{eq:cvector} \textbf{CVE} \ \textbf{removed} \ \textbf{concrete} \ \textbf{forms} \ \textbf{from} \ \textbf{the} \ \textbf{foundation} \ \textbf{for} \ \textbf{the} \ \textbf{new} \ \textbf{building} \ \textbf{on} \ \textbf{the} \ \textbf{North} \ \textbf{end} \ \textbf{of} \ \textbf{the} \ \textbf{site}.$ 

No excavating.

No active exclusion zone.





# 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT HEALTH SAFETY MANAGER (HSM)

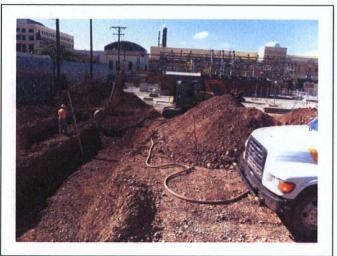
### **DAILY CHECKLIST**

	DAIL I CHECKLIST
DATE:	10/22/11
<u>General</u>	
	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
B1 A	activities for the day
NA .	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable
NADocu	ment required Respirator Training completion with Form H
<b>NA</b> .	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
· NA	Confirm return of waste material manifest documents for each load with site manager.
NA	Complete all CSHASP Forms (for applicable activities planned for that day)
NA	Illness/Injury Report Form A
NA	Site-Specific Training Record Form C
NA	Hot Work Permit Form D
NA	Trench/Evacuation Permit Form E
NA	Combined Space Entry Permit From F
NA	Exclusion zone operations are practiced as instructed.
	NA Decontamination unit is working properly.
	NA Workers are using decontamination unit as instructed.
	NA Workers use personal protective equipment properly.
$\square$	Set air samples at cardinal compass points around exclusion zone. Check
-	throughout the day to ensure proper operation.
Ø	Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
☑	Review sign-in/sign-out log throughout and at the end of the workday.
Ø	Secure the site at the end of the workday; PacifiCorp Employee
Sampling	g
NA	Soil Confirmation sampling for any newly excavated areas
NA	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
	exclusions zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA	Digitally photograph each sample location and at any place field sampling personnel determined necessary





Electronically file photo files into the on-site database NA $\square$ Complete Field Documentation Field Sample Data Sheets (FSDS)  $\square$  $\square$ Logbook NAOn-site computer database  $\square$ Label each sample media with a unique number  $\square$ Seal sample(s) in zip lock plastic bags Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory  $\sqrt{\phantom{a}}$ Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples Review and disseminate sample results as received from the laboratories to Project NA Manager and other appropriate managers and employees NA Electronically file sample reports into on-site database



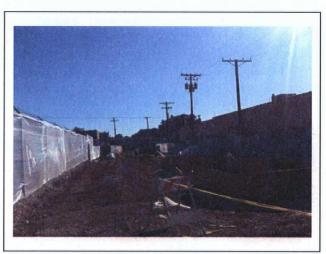
РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

### R&R Environmental, Inc.

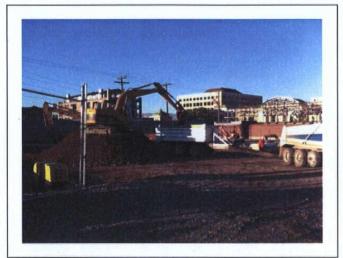
47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

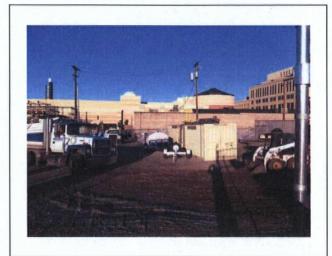
DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JRWC	DATE: 10/17/2011	FILE:	

### SITE PHOTOGRAPHS





РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

R&R Environmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JRWC	DATE: 10/18/2011	FILE:	

### SITE PHOTOGRAPHS





РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

R&R Environmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JRWC	DATE: 10/19/2011	FILE:	

### SITE PHOTOGRAPHS





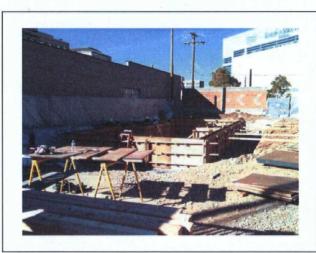
РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

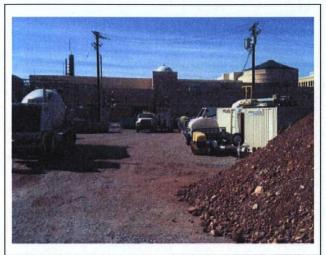
DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE: 10/20/2011	FILE:	W

### **SITE PHOTOGRAPHS**





РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

### R & REnvironmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

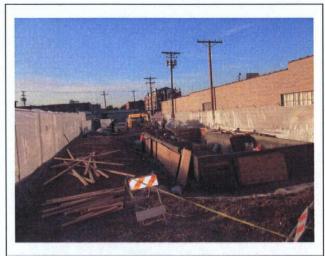
DESIGNED BY:	SCALE:	REVIEWED BY: DCR	а
DRAWN BY: JMK	DATE 10/21/2011	FILE:	

SITE PHOTOGRAPHS





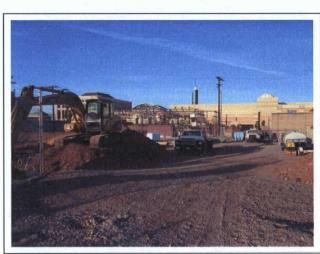
РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

### R&R Environmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:

SCALE:

REVIEWED BY:

DCR

DRAWN BY:

JRWC

DATE:

10/22/2011

FILE:

SITE PHOTOGRAPHS



### PACIFICORP OPERATIONS - Field Construction Representative Daily Log Third West Sub - Rebuild Monday, October 17, 2011 PROJECT NAME: DATE: PO & Work Order NO.: 3000078050 / 10035803 MAIN CONTRACTOR: Cache Valley Electric Crew Start Time: 10:40 Crew Stop Time: 17:30 Tot Hrs mns: 17:30 FCR Start Time: FCR Stop Time: Tot Hrs mns: 10:45 Use military time format 00:00 **WEATHER CONDITIONS:** Partly Cloudy/Sunny - 75 degrees DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) R&R set up four monitors. it was necessary to re-open the exclusion zone this morning to facilitate the removal of some material behind the visqueen curtain that is in the way of the pull-box on the west side of the control building. Newman had two people suit-up long enough to accomplish this task and all other personnel were restricted from entering the exclusion zone. We have once again closed down the exclusion zone and currently there is not an active exclusion zone. R&R is conducting a HAZWOPER/Asbestos Awareness Training class onsite today (5 students, 1 trainer). Honey Bucket came into the site and cleaned the portable toilets. Newman is excavating the south end of the east excavation (SE corner of the yard) in preparation for placement of concrete for the "G" foundations. The personnel taking the class tied rebar mats for structures e and G. Contractors: CVE = 3, Newman = 3, R&R = 1, Wilding = 1, Class = 6. IF WORKING IN ENERGIZED SUBSTATION: Dispatcher login, name and time: Kim Batt 0650 Dispatcher logout, name and time: Ken Barto 1730 **DISCREPANCIES:** IMMEDIATE CORRECTIVE ACTION TAKEN: DELAYS OR LOST TIME ENCOUNTERED: EQUIPMENT (working, delivered, idle): Portable toilet (2), forklift, 2 dumpsters, office trailer, conex, exclusion zone conex (2), water wagon, portable wash-down structure, trackhoe, trackhoe



OSHA Recordable Safety Incidents:

w/pavement breaker, mini-ex, bobcat, power washer, water truck, compactor, CVE tool trailer, crew truck, backhoe.

Russ Johnson

Reported by:

Time:

### PACIFICORP OPERATIONS - Field Construction Representative Dally Log

PROJECT NAME:	Third West S	ub - Rebuild	DATE:	Tuesda	y, October 18	, 2011
PO & Work Order NO. :	3000078050	/ 10035803	MAIN CONT	RACTOR :	Cache Valle	y Elec <b>tr</b> ic
Crew Start Time:	7:00	Crew Stop Time:	17:20	)	Tot Hrs mns:	10:20
FCR Start Time:	6:40	FCR Stop Time:	17:25		Tot Hrs mns:	10:45
Use military time format 00:00	0.40	FOR Stop Time.	17.25	,	, 10t mis mile.	10.43
Ose fillitary time formation.						
WEATHER CONDITIONS:		. Suni	ny - 70 degrees	S		
DESCRIPTION: (work perform	ned, general com	ments, instructions to d	contractor, # o	of crew mer	mbers onsite.	.)
R&R set up four monitors. R&R is consultating walls, approximately 70% of in the SE corner of the yard (approximated material to a storage local 3, Newman = 5, R&R = 1, Wilding =	omplete. Current e imately 50% compl ation off-site. Again	stimate is to pour the walls on tee) for placement of the spr	on Thursday at 1 ead footings and	1:00 AM. <b>N</b> e I hauling (two	ewman continue o trucks and pur	es to excavate os) of
IF WORKING IN ENERGIZED S Dispatcher login, name and time:	Kim Batt 0640				<u>.</u>	
Dispatcher logout, name and time:	Joe Bryant 1720					
DISCREPANCIES:			MMEDIATE C	ORRECTIV	E ACTION TA	KEN:
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DELAYS OR LOST TIME ENC	JONIERED:				,	
EQUIPMENT (working, deliver	ed idle)					
Portable toilet (2), forklift, 2 dumpsters, ow/pavement breaker, mini-ex, bobcat, po	office trailer, conex , e				cture, trackhoe, tra	ackhoe
OCUA Boosedoble Cofety Inch	donto	· · · · · · · · · · · · · · · · · · ·	<del>,</del>	Donostad I	hw	 Time:
OSHA Recordable Safety Incid	ueills:		· · · · · · · · · · · · · · · · · · ·	Reported I	uy:	inne:



Russ Johnson

Field Construction Representative

### PACIFICORP OPERATIONS - Field Construction Representative Daily Log Third West Sub - Rebuild PROJECT NAME: DATE: Wednesday, October 19, 2011 3000078050 / 10035803 MAIN CONTRACTOR: Cache Valley Electric PO & Work Order NO. : Crew Start Time: 7:00 Crew Stop Time: 17:2**0** 10:2**0** Tot Hrs mns: FCR Start Time: 9:00 FCR Stop Time: 17:25 8:25 Tot Hrs mns: Use military time format 00:00 **WEATHER CONDITIONS:** Sunny - 70 degrees DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) R&R set up four monitors. R&R is continuing the HAZWOPER class. CVE crew continues to form up the walls and tie rebar for the control building walls, approximately 85% complete. Revised pour date of 10/21 @ 1:00. Newman continues to excavate in the SE corner of the yard (approximately 75% complete) for placement of the spread footings and hauling (two trucks and pups) of excavated material to a storage location off-site. Newman expects to proof roll the excavation at 10:00 on Friday, Oct. 21. Contractors: CVE = 3, Newman = 5, R&R = 1, Wilding = 1, Class = 6. IF WORKING IN ENERGIZED SUBSTATION: Dispatcher login, name and time: Manny LuHaun 0650 Dispatcher logout, name and time: Ken Barto 1725 DISCREPANCIES: **IMMEDIATE CORRECTIVE ACTION TAKEN:** DELAYS OR LOST TIME ENCOUNTERED:

EQUIPMENT (working, delivered, idle):

Portable toilet (2), forklift, 2 dumpsters, office trailer, conex, exclusion zone conex (2), water wagon, portable wash-down structure, trackhoe, trackhoe w/pavement breaker, mini-ex, bobcat, power washer, water truck, compactor, CVE tool trailer, crew truck, backhoe.

OSHA Recordable Safety Incidents: Reported by: Time:



Russ Johnson

Field Construction Representative

### PACIFICORP OPERATIONS - Field Construction Representative Dally Log

PROJECT NAME:	Third West	Sub - Rebuild	DATE : Thursd	a <b>y</b> , <b>O</b> ctober 20, 2011	_
PO & Work Order NO. :	300007805	0 / 10035803	MAIN CONTRACTOR:	Cache Valley Electr	c
Crew Start Time:	7:00	Crew Stop Time:	17:20	Tot Hrs mns: 10:20	
FCR Start Time:	9:00	FCR Stop Time:	17:25	Tot Hrs mns: 8:25	_
Use military time format 00:00					
•					
WEATHER CONDITIONS:		Sun	ny - 70 degrees		
DESCRIPTION: (work perfe	ormed, general cor	mments, instructions to	contractor, # of crew me	mbers onsite.)	_
R&R set up four monitors. R&R	completed the HAZW	OPER class and all participar	nts passed. The four fabricate	ors spent the rest of the o	
working with the rest of the CVE 95% complete. Revised pour da complete) for placement of the s Newman expects to proof roll the UDEQ, called to get an update of that there is some possibility that Newman = 5, R&R = 1, Wilding	ate of 10/21 @ 1:00. No spread footings and has e excavation at 10:00 on our progress and a st it could be the week	lewman continues to excavate uling (two trucks and pups) on Friday, Oct. 21 and had a projection as to when we wo	e in the <b>SE co</b> rner of the yard of excavated material to a stol 5 ton smooth drum compactor ald be opening up our next ex	I (approximately 85% rage location off-site. or delivered. Craig Barne colusion zone. I indicated	ett,
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IF WORKING IN ENERGIZE	D SUBSTATION:	·		<del></del>	
Dispatcher login, name and time		0650		<del></del>	$\neg$
Dispatcher logout, name and tim	ne: Ken Barto 1725	5			
DISCREPANCIES:			MMEDIATE CORRECTIV	E ACTION TAKEN:	
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DELAYS OR LOST TIME EI	NCOUNTERED:				_
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EQUIPMENT (working, deli					
Portable toilet (2), forklift, 2 dumpste w/pavement breaker, mini-ex, bobca					
OSHA Recordable Safety II	ncidents:		Reported	by: Time:	_
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Russ Johnson

Field Construction Representative

# PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME:	I hird Wes	t Sub - Rebuild	DATE: Frida	y, October 21	, 2011
PO & Work Order NO. :	30000780	50 / 10035803	MAIN CONTRACTOR	:_Cache Vall	ey Elec <b>tr</b> ic
Crew Start Time:	6:50	Crew Stop Time:	16:30	Tot Hrs mns:	9:40
FCR Start Time:	6:45	FCR Stop Time:	16:30	Tot Hrs mns:	9:45
Use military time format 00:00			,	-	
WEATHER CONDITIONS:	· ·	Sun	ny - 70 <b>d</b> eg <b>r</b> ees		
DESCRIPTION: (work perfor	rmed, general co	omments, instructions to	contractor, # of crew me	embers onsite	e.)
identified one soft spot along the oup and see if it will dry out over the look at the entire subgrade when walls, pull box and vaults. Poured 2:30. Newman continues to excal hauling (one truck and pup) of excepup) to the storage site. Newman discussed the potential for some reincreasing the size of both the wa CVE will be working on Saturday.	the weekend. PSi withe excavation is control building water in the SE cornicavated material to a shut down early as modifications to the land the footer, where	ill return on Monday to evaluate omplete. CVE crew continued tills, pull box and vaults (approver of the yard (approximately a storage location off-site. To setheir trucks would have interferetaining wall along the south nich will probably mean taking	e that area and then will conto form up the walls and tie kimately 24 cy), starting at 1:90% complete) for placemer date they have hauled approferred with the concrete deliviside of the project, indicating down the fence and reinstall	ne back around rebar for the coron on and complet of the spread eximately 45 loavery. Brent Wigg that it could in	Thursday to ntrol building ting the pour footings and ds (truck and gins called ar volve
IF WORKING IN ENERGIZED	SUBSTATION:			······	
Dispatcher login, name and time:	Gus Montane:				
Dispatcher logout, name and time	: Ken Barteaux				
DISCREPANCIES:			MMEDIATE CORRECTIV	/E ACTION T	AKEN:
				i	
				- "	
,					
DELAYS OR LOST TIME EN	COUNTERED				
DELATO OR LOST TIME EN	JOUNTERED.				
EQUIPMENT (working, delive	ered idle):				
Portable toilet (2), forklift, 2 dumpsters w/pavement breaker, mini-ex, bobcat,	s, office trailer, conex				
			·		
OSHA Recordable Safety Inc	idents:		Reported	by:	Time:
		<u> </u>			



# PACIFICORP OPERATIONS - Field Construction Representative Daily Log PROJECT NAME: Third West Sub - Rebuild DATE : Saturday, October 22, 2011

•						
PO & Work Order NO. :	30000780	50 / 10035803	MAIN CONT	RACTOR :	Cache Valle	y Electric
Crew Start Time:	6:50	Crew Stop Time:	12:00		Tot Hrs mns:	5:10
FCR Start Time:	6:45	FCR Stop Time:	12: <b>0</b> 0		Tot Hrs mns:	5:15
Use military time format 00:00		-			_	
		_				
WEATHER CONDITIONS:		Sun	ny - 70 degrees	<u> </u>		
DESCRIPTION: (work perform	rmed. general co	omments, instructions to	contractor. # o	f crew men	nbers onsite.	)
R&R set up four monitors. CVE of						
Wilding picked up their concrete t	est cylinders. New	man is not on the site today. <b>C</b>	ontractors: CVI	E=9, R&R	= 1, Wilding = 1	۱.
		•				
				•		
	No. 1	•				
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	•					
					•	
•						
IF WORKING IN ENERGIZED	SUBSTATION:					
Dispatcher login, name and time:	Earl McGlore	0655				
Dispatcher logout, name and time	Earl McGlore					
DISCREPANCIES:			MMEDIATE C	ORRECTIVE	E ACTION TA	KEN:
DELAYS OR LOST TIME EN	COUNTEDED					•
DELATS OR LOST THE EN	COUNTERED.					
-				*		
EQUIPMENT (working, delive Portable toilet (2), forklift, 2 dumpsters		evalueion zone coney (2) water	vagon, nortable wa	eh-down etruc	ture trackhoe tr	ackhoe
w/pavement breaker, mini-ex, bobcat,					ture, trackinoe, tra	BOKI IQC
	·	•				
·						
OSHA Recordable Safety Inc	cidents:			Reported b	y:	Time:



Russ Johnson



October 19, 2011

Laboratory Code:

**RES** 

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

**RES 222689-1 N**one **G**iven

Project Description:

None Given

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 222689-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely.

Jeanne Spencer Orr

President

### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 222689-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

**Client Project Description:** 

**None Given** 

Date Samples Received:

October 18, 2011

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

October 18, 2011 - October 19, 2011

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter
ID Number	ID N	umber	Analyzed	Volume Sampled	Asbestos Structures Detected	Sensitivity	Concentration	Loading
			(mm²)	· (L)		(s/cc)	(s/cc)	(s/mm²)
3W-101711-N	EM	811915	0.0770	1050	ND	0.0048	BAS	BAS
3W-101711-E	EM	811916	0.0770	1050	ND	0.0048	BAS	BAS
3W-101711-S	EM	811917	0.0770	1046	ND	0.0048	BAS	BAS
3W-101711-W	EM	811918	0.0770	1042	ND	0.0048	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

**BAS = Below Analytical Sensitivity** 

Effective Filter Area = 385 sq mm

Average Grid Opening in mm<sup>2</sup> = 0.011

DATA QA

Due Date: \C Due Time:

### REILAB RESELVOITS ENVIRONMENTS, INC. 6801 Logan St Dawrr, CO 80216 - Pit: 303 864-1986 - Fax 303-477-4275 - Tolt Free :800 RESI-ENV

Pager: 303-509-208a

	INVOICE TO: (IF	DIFF	ERE	NT)										ONTAC	T IN		MATION:			
Company: P8R BUILDINGERIAL	Company:					Contact:		40	E	R	75.K	EL	127			Conlact	t:			
Address: 47 w 9000 Sp	Address:					hone:	8	01	5	4/-	10	35				Phone:				
SARDY UT						8XC										Faxc				
g407 <u>0</u>		<u></u>				Cell/page										Callipag	ger: 			
Project Number are/or P.O. #:						Final Da	ta Deli	verable	e Ema	il Addıs	198:									
Project Description/Location:																				
ASBESTOS LABORATORY HOURS: Weekdays; 7aili - 7piti		F			REC	UEST	ΓED	ANA	LYS	SIS					VAL	ID M	ATRIX CO	DES	L/	B NOTES:
PLMI / PCM / (EM) RUSH (Same Day) PRIORITY (Next Day	) STANDARD	$\vdash$				T			Π̈́	Ī		T	1		Nr =			ulk = B	1	
(Rush PCM = 2lir, TEM = 6hr.)	, <u> </u>	11	,	1 1	1 1	-	11	1	11						ust =		Р	aint = P		
CHEMISTRY LABORATORY HOURS: Weekdays: Bam - Spm		1			-11	ł				11		1.	ł		ioli =		W	ipe = W	1	
Metal(s) / Dust RUSH 24 hr 3-5 Day		1	ჟ			1					1	1		Sw	ab =	sw	F	= Food		
RCRA 8 / Metals & Welding	"Prior notification is	2	Quant,		-	<b>⊑</b>			퇄	1 ]		9		Drinking	Wa	er = D	W Waste	Water = WW		
Fume Scan / TCLP RUSH Sday 10 day	required for RUSH tumerounds.**	링			,	8			8	1 1		퓛	E C		_		= Other			
Organics 24 tr 3 day 5 Day		Point Count	, a l		- { - { :	Metals			Quantification	[=	_	Ę	Ş	"AST	MEI	792 apj	proved wipe	media only**		
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9ani - 6pn		] 🚊 [	iğeci İğeci				1		O	g   g	1 gt	5   3	E S			1				
E.coli O1S7:H7, Coliforns, S.aureus 24 hr2 Day		g.	Level II, 7402, ISO, +/-, o-vac, ISO-Indirect Preps	OSHA	<u>.</u>	<b>E</b>			5	- or Quantification	Ě	ntification . Or	TALS OR OTHER NOTES	1	1			ł		
Salmonella, Listeria, E.coli, APC, Y & M 48 Hr3-5 Day	•	9	, S	8 :	율   [	20			<b>‡</b>	8	Otra	8	R O	1				•		
MoldRUSH24 Hr	48 Hr3 DayS Day	2	vac.	7400B,	နှီ စြ			*	틝	ទី ៦	8		2	1				l .	<u></u>	
**TUINARBUINI lines establish a laboratory priority, subject to laboratory volume and a	re not guaranteeri. Additional fees	ğ	TEM - AHERA, Level Semi-quant, Micro-vac,	14	- Total, Respirable LS - Aealyte(s)	ORGANICS - METH	Salmonella: +/-	֡֡֞֞֞֞֞֞֞֞֞֞֞֜֞֞֜֞֞֞֜֞֞֡֓֓֓֓֓֡֡	Aerobic Prate Count:	ธ่≱	÷   8	≏إة	SAMPLER'S INITIALS	ę			•		<u></u>	
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			# E	<u> </u>	METALS	§   §	8		ě,	8 8	80 >	-   §	₹ Z	Sample V (L) / Area	ğ	ই	Collected	Collected		Use Only)
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1 3W 701711-N		1				Ì							l	1050		l			81	1915
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3 34-101711-5		ITT			1				11		$\sqcap$	$\top$	<del>                                     </del>	1046						(1)
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Number of samples received: (Additio	nal samples shall be listed on			_		cars	of orla	oinsi d	isia. R	v s <b>ic</b> ini	ná cile	ent/cc	inpañy r	sorassotaliv	<b>e</b> ao:	es thet	submission o	f the following s	amples for	Acquested
analysis as indicated on this Chain of Custody shall constitute an analytical services agreem	ent with payment tenns of NET 30 day	rs, failun	e to con	noly with	n paymer	t tenns	may re	sult in	18 1.5	% mon	thly in	teres	t surcha	ge.	5					
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### **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

### Asbestos Tyoe

#### Structure Types

Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

= other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

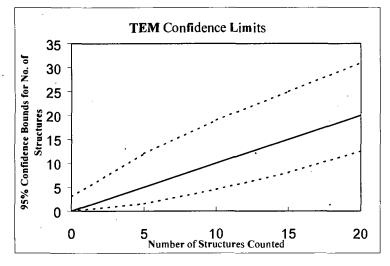
### Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron 1.80 length units = 0.5 micron 18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bemard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

#### Reservoire Environmental, Inc. **TEM Asbestos Structure Count**

Laboratory name:	REI
Instrument	JEOL 100 N S
Voltage (KV)	100 KV
Magnification	20KX JOKX
Grid opening ares (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	Rar
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1050
Date received by lab	10/18/11
Lab Job Number:	222689
Lab Sample Number:	811915

Fraction of primary filter used	1	
Total Resuspension Volume (ml)		
Volume Applied to Secondary filter	<del>                                     </del>	

Analyzed by	M
Analysis date	/0/18/tl
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	6
Counting rules (ISO, AHERA ASTM)	AH
Grid siorage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identificatkın	Mineral Class			·	1 = yes, blank = no		
	One Opening	Туре	Primary	Total	Length	Width		Amphibole ·	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	115-3	NO												
	<b>G</b> 5-3	2			·		Prep	A 907.1	Mac	t ~	5%. dubri.			
	F5-3	ND		·			Preve	B ~70/-	May	1 1	5% debri.	2		
	25-3	M						Sen	Ma	a.	whelm			
B	F36	M			<u> </u>			0			,			
	£3-6	110												
	F2-3	NO						`						
								·						

### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 N S
Voltage (KV)	100 KV
Magnification	(20KX )0KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	RAR
Sample Type (A=Air, D=Dust):	A
Air voiume (L) or dust area (cm2)	1050
Date received by lab	10/18/11
Lab Job Number	222689
Lab Sample Number:	811916

Method (D=Direct, I=Indirect, IA=Indirect, ashed) Counting mles	0/1
(ISO, AHERA, ASTM)	<u> </u>
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Pr	reps Only):
Fraction of primary litter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter	

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification Mineral Class			1 = yes, blank = no				
One	Grid Opening	Туре	Primary	Total	Length	Width	Identinostion	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	64-6	ND					ſ		·			·		
	F4-6	W			F	ujó		To wenter	et	_5	on delan			
	E4-6	W			4		3 1	A						
	64-6	W				7		Bul	10/19	/(				- :
B	F3-6	ND							7	/				
	E3-6	W)												
	C3-6	Sur									-			·
				•										

### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
bistniment	JEOL 100 N S
Voltage (KV)	100 KV
Magnification	(20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D=	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	RAR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1046
Date received by lab	10/18/11
Lab Job Number:	222689
Lab Sample Number	811917

Analyzed by	JB
Analysis date	whalu
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D'
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Fracilm of primery filter used	·		
Total Resuspension Volume (ml)			
Volume Applied to secondary filter (ml)			

Grid	Grid Opening	Structure	No. of St	mctures	Dime	nsions	Identificatkm	Minetal Glass	<del>,</del>			1 ≐ y	es, blank	= no
		Туре	Primary	Total	Length	Width		Amphibole		NAM	Sketch/Comments	Sketch	Photo	EDS
A	44-4	. M)				`					,			
-	64-4	W				MS	A	90 hinh	wt	5/	6 depris			
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### Reservoirs Environmental, inc. TEM Astrestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 N S
Voltage (KV)	100 KV
Magnification	(20KX)10KX
Grid opening atea (mni2)	0.011
Scate: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client:	RAR
Sample Type (A=Air, D≖Dust):	A
Air volume (L) or dust area (cm2)	1042
Date received by lab	10/18/11
Lab Job Number:	222689
Lab Samole Number:	811.918

Analyzed by	TA
	Jal al
Analysis data Method (D=Direct, I=Indirect,	10/13/10-
IA=IridirecL ashed)	<u> </u>
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Pr	eps Only):	
Fraction of primary filter used		
Total Resuspension Volume (ml)		•
Volume Applied to secondary filter		

Grld	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blank	blank = no	
		Туре	Primary	Total	Length	Width	.commoduo.i	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS	
A	H5-3	11													
	65-3	W				,	,	,							
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B	H5-6	W		· ·		Ĭ									
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#### **Analytical Procedures - AHERA**

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be tenninated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration, s/cc =  $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1t}{1000cc}$ 

Filter loading,  $s/mm^2 = \frac{\# \text{ Asbestos structures}}{\text{Area Analyzed (mm}^2)}$ 

GO = TEM grid opening



October 25, 2011

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 222690-1 None Given

Project Description:

Rocky Mtn. Power 3rd West Sub Station

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 222690-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 222690-1

Client:

R & R Environmental

Ciient Project Number / P.O.: None Given **Client Project Description:** 

**Date Samples Received:** 

Rocky Mtn. Power 3rd West Sub Station

October 18, 2011

Analysis Type:

TEM, AHERA

Turnaround:

3-5 Day

**Date Samples Analyzed:** 

October 24, 2011

Client	Lab Area Air N			Number of	Analytical	Asbestos	Filter	
ID Number	ID N	umber	Analyzed	Volume Sampled	Asbestos Structures	Sensitivity	Concentration	Loading
				Odinpica	Detected			
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
<b>3W-</b> 101511 <b>-N.E.</b>	EM	811919	0.0550	1695	ND	0.0041	BAS	BAS
<b>3W-</b> 101511-S.E.	EM	811920	0.0550	1692	ND	0.0041	BAS	BAS
3W-101511-N.W.	EM	811921	0.0550	1692	ND	0.0041	BAS	BAS
3W-101511-S.W.	EM	811922	0.0550	1690	ND	0.0041	BAS	BAS
3W-101611-S.E.	EM	81192 <b>3</b>	0.0770	1136	ND	0.0044	BAS	BAS
3W-101611-N.E.	EM	811924	0.0770	1138	ND	0.0044	BAS	BAS
3W-101611-N.W.	EM	811925	0.0770	1141	ND	0.0044	BAS	BAS
3W-101611-S.W.	EM	811926	0.0770	1145	ND	0.0044	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity Average Grid Opening in mm<sup>2</sup> = 0.011 Effective Filter Area = 385 sq mm

### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

### TABLE II. SUMMARY OF ANALYTICAL DATA

**RES Job Number:** 

RES 222690-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

**Client Project Description:** 

Rocky Mtn. Power 3rd West Sub Station

Date Samples Received:

October 18, 2011

Analysis Type:

TEM, AHERA

Turnaround:

3-5 Day

Date Samples Analyzed:

October 24, 2011

Client ID Number	Lab ID No	umber	Asbestos Mineral			·		Structures >5 Microns	**Excluded Structures	Asbestos Structures
			_	Asl	estos Str	ucture Typ	oes*	in Length		for
•			•	Fibers	Bundles	Clusters	Matrices	•		Concentration
3W-101511-N.E.	EM	811919	ND	0	0	0	0	0	0	0
3W-101511-S.E.	EM	811920	ND	0	0	0	0	0	0	0
3W-101511-N.W.	EM	811921	ND	0	0	0	0	0	0	0
3W-101511-S.W.	EM	811922	ND	0	0	0	0	0	. 0	0
3W-101611-S.E.	EM	81192 <b>3</b>	ND	0	0	0	0	0	, 0	0
3W-101611-N.E.	EM .	811924	ND	0	0	0	0	0	0	. 0
3W-101611-N.W.	EM	81192 <b>5</b>	ND	0	0	0	0	. 0	0	0
3W-101611-S.W.	EM	8 <b>11</b> 92 <b>6</b>	ND	0	0	0	0	0	0	0

<sup>\*</sup>See Analytical Procedure for definitions

ND = None Detected

<sup>\*\*</sup>C = Excluded from total due to lack of confirmation

<sup>\*\*</sup>L = Excluded from total for length less than 0.5 micron (AHERA only)

<sup>\*\*</sup>A = Excluded from total due to incorrect aspect ratio

Due Date: 10.21-10.25
Due Time: 515

## BEILAE RESERVOIRE Environmentsi, Inc. 5801 Logan Si. Denvor, CO 80216 · Ph. 303 804-1899 · Fax 303-477-4276 · Toll Free 886 RESI-ENV

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	101511 - N.E		, po canado,		1	X	1	-	4 12	-	T	WII O LEC			<mark>"</mark>	1,695	_	+	10/15	7	issault es b	811919		
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	loish - N.W	<u> </u>		<del></del>	╁┈	┼┼	+	┿	<del> </del>		╅		$\vdash$	╼┾╌┼╸	<del>+</del>		-	+		+		21		
		and the property of the second states and the second secon		er de la company de la comp	╁			┼		<b> }</b> -			} -}			1692		-						
	<u> 101511 - 3 W</u> 101611 - 3 E.				╬	╁┼		├		-	+		++		+	1691	4		<u>\</u>	<del></del>		77 73		
		بچه ری به محمد ا میپریشند مساکنند. میناشده کادبالات بر دوشاه یا مده دیپرونو <u>ان به ب</u> ه محمد با معید			+	╁╌┝										1136	2	+	10/1	श्राम				
	101611 - N.E				_			ļ		L	-		1_1		<u> </u>	11.38						2A		
7 31	10661 - N.W.				1			L	<u> </u>					<u>. L L</u>		1141	$\perp \!\!\! \perp$					25		
8 3W	101611 - S.W.					V	•									1149	5		V			26		
9						]							T									7		
10					1-		1	1	T	<b>!</b>	+	-	+-+		1-1	1	-	-	\					
	samples received:	(8)	(Additional	samples shall be lated o	i n atta	ched	long 4	L	1	بلــــــــــــــــــــــــــــــــــــ		<u></u>		I	,l	L			l					
NOTE: F	El will analyza insoming s	amplea szege upon interpretion received s	and will not be respo	onsible ibrarrors or omissiom in	CB CLIN	ations r	reauding	from	the Inacc	uraay o	t origin	al data	By a	igning oil	n/eanipany	rapresemat	tus ag	raea lh	et tubmis	alsn of t	the following a	amples for requested		
		of Custody shall constitute an analytical at	al Aicea a Bleanigus A		ya, rai	ure to	comply	win p	aymant t	ma m	y reel	IT IN 8	1,070	monuniy li	ITERYSI BURCH	arge.								
Relingul		Ture 123	<u> </u>	led Ex					me:	110	711			سيسين		8	ampl	e Con	dition:	0	n Ice	Seeledintact		
Received B	ory Use Only	Kabli-	Date/T	ime: 10 181	1		92	15	Carrie	Ŧ	₽	d.	B	P		To	emp.	(F°)		_ Ye	ss/No `	res / No Yes / No		
Resulta:	Contact	Phone Email Fex	Date		Itlals	To	Conta	ct	- Carrie		Phon	e En	Τ	-ax	<del></del>	Date				Time	<del></del>	Initiate		
	Contact	Ptxme Email Fax	Date		Itlais		Conta	ct			Phon	e En	well I	ax		Date				Time	6	Initials		
	TR	K 7953 628	2008	8		- ^^			•		j.	(												

### Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

### Asbestos Type

### Structure Types

A = Amosite	F = Fiber
An = Anthophyllite	B = Bundle
C = Chrysotile	$\cdot$ C = Cluster
Cr = Crocidolite	M = Matrix
T = Tremolite	

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

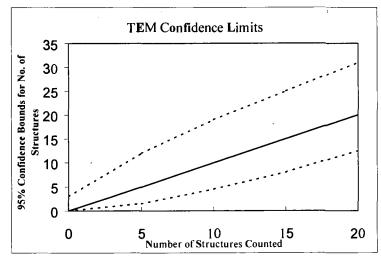
### Sizing Conversion 1 length unit = 5 mm on screen = 0.278 micron

1.80 length units = 0.5 micron 18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM** Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Page	4	۸f		
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## Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100/10 S
Voltaae (KV)	100 KV
Magnification	20KX)toKX
Grld opening area (mm2)	0.011
Scale: 1L =	0,28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	Rock
Sample Tyoe (A=Alr, D=Dust):	A
Air volume (L) or dust area (cm2)	1695
Date received by lab	10/18/11
Lab Job Number:	222690
Lab Sample Number:	511919

Analyzed by	JB
Analysis date	1924/11
Method (D=Direct, I=Indirect,	
tA=Indirect, ashed) Counting rules	1 0
(ISO, AHERA, ASTM)	
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):

Fraction of printary filter used

Total Resuspension Volume (mi)

Voluma Applied to secondary filter (mi)

Melsel

Grid	Grid Opening	Structure	No. of Str	ructures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	F4-6	MD												
	£4-6	M		 	Pm	o A	70	Link	-	5%	delaris			
	C4-6	W			Pm	b/b	80	honful	<i>t</i>	50	debns			
B	F4-6	M						1 1						
	EU-6	M			<u> </u>		4	But who	4/4			<u> </u> 		
	,								7					
								·						
													·	
							,							

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rave		C) I	

Laboratory name:	REI_
Instrument	JEOL 100/10 S
Voltage (KV)	100 KV
Magnification	r 20KX)IOKX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
OA Tyoe	

TEM Asbestos Str	ucture Count
Client :	ROR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1692
Date received by lab	10/18/11
Lab Job Number	222690
Lab Sample Number:	5119 70

Renervoirs Environmental, Inc.

Analysis date	1924
Method (D=Direct, l=Indirect,	1-1-11
IA≃Indirect, ashed)	
Counting rules	
(ISO, AHERA, ASTM)	_   AH
Grid storage location	Month Ahalyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps	Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary litter (ml)	

Grid	Grid Opening	Structure Type	No. of St	uctures	Dime	nsions	Identification	Mineral Class		<del></del>				_
	<u> </u>		Primary	Total	Length	Width	ide in ideal of	Amphibole	С	NAM	Sketch/Comments	1 1	es, blank Photo	= no EDS
H	63-6	MD						-		***************************************	or more		111010	- 500
	F3-6	M			Pu	20	A S	Otanl	and the		- 7d/ dal			
	F4-3	W		· ·	Pre	0	2 8	0 %	mr	<u>~</u>	7% del	NS		-
B	63-4	MS							1			743		
	F3-4	W						Asn	(n)	24/				
									1	74				
		· · · · · · · · · · · · · · · · · · ·												
<u> </u>										<del></del>				$\vdash$
<u> </u>						<del> </del>				<del></del>				-

<del></del>	<del></del>
Laboratory name:	REI
Instrument	JEOL 100/10 S
Voltage (KV)	100 KV
Magnification	r 20KX)toKX
Grid opening area	
(mm2)	0.011
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area	
(mm2)	385
Secondary Filter Area (mm2)	

QA Type

## Reservoirs Environmental, Inc. TEM Asbestos Structure Count

	Client:		Rock	2		
	Saniple Type (A=	Air, D=Dust):	A			
	Air volume (L) or (cm2)	dust area	(10	92		
	Date received by	lab	10/18	la .		
	Lab Job Number			690		
	Lab Sample Nun	nber:	54921			
•		1	,	• .		

F-Factor Calculation (Indirect P	reps Only):
Fraction of primary tilter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	<del> </del>

· · · · · · · · · · · · · · · · · · ·	
Analyzed by	J13
Analysis date	idzylii
Methpd (D=Oirect, I=Indirect,	7, "
IA=Indirect, ashed)	D
Counting mies	00 1
(ISO, AHERA, ASTM)	
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of Str	uctures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width	10	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	144-1	M												
	(914)	M			4	)	1 8	Thomas	7	l's	Folor de	ans		
	F4-1	MS			1	MO	13 91	2 % inter	4	<u>s</u> -	7 % delo	n3		
3	E4-4	M							sh		1			
	C4-4	W						4	Par	1,	0/24/11			
										,				

Reservoirs	Environmental,	Inc.
TEM Ashae	toe Structure C	

	TODOSCOS OUT	actave Count
Client :		Rork
Sample Type (A=Ai	ir, D=Dust):	A
Air volume (L) or du (cm2)	ıst area	1690
Date received by la	b	العامد
Lab Job Number		222690
Lab Sample Numbe	er:	8119 22

F-Factor Calculat	on (Indirect Pre	ps Only):
Fraction of primary to		
Total Resuspension	Volume (ml)	

Volume Applied to secondary filter (ml)

Pag	ie 1	of	

Analyzed by	JB	
Analysis date	1924	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	7-3-11	
Counting rules (ISO, AHERA, ASTM)	AH	
Grid storage location	Month Analyz	ed
Scope Ailonment	Date Analyze	ed .

Grid	Grid Opening	Structure Type	No. of Str		Dimei	nsions	Identification	Mineral Class				1 = y	es, blank	= no
			Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments		Photo	EDS
<u>H</u> _	C4-6	M)_												
	134-6	W			PV	pA	809	Lonfart		3-	5% delan	ل م		
	A4-6	M			R	26	SD '	Loighent		3-5	-of debo	<del>ک</del> ۔۔۔ ک		
_6_	E3-3	W				V .		,	. /			<del>/-</del>		
<del></del>	(3-3	W						13	10	24/10				+-
· · · · · · ·								1 tour	(-17)	2//11		<del></del>		
		· .						1						-
·														+
										<del></del>				
						<del></del>		,						-

Laboratory name:

Magnification
Grid opening area

Scale: 1D =
Primary filter area
(mm2)
Secondary Filter Area

Instrument

Voltage (KV)

(mm2)

(mm2)

QA Type

Scale: 1L =

REI

JEOL 100/10 S

100 KV

20KX)10KX

0.011

0.28 um

0.056 um 385

# Recervoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100/10) S
Voltage (KV)	100 KV
Magnification	20KX)IOKX
Grid opening area (mm2)	0.011
Scale: 1L =	0,28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :		Rock	2
Sample Type (A=A		A	
Air voluma (L) or d (cm2)	lust area	1	36
Date received by I	ab	10/18	1
Lab Job Number:		222	690
Lab Sample Numb	ber:	5/19	7 23
1		• • •	•

		_
Analyzed by	J13	-
Analysis date	1924	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D	
Counting mles (ISO, AHERA, ASTM)	AH	
Grid storage location	Month Analyze	d
Scope Alignment	Date Analyze	d

F-Factor Calculation (Indirect Pre	eps Only):
Fraction ot primary filter used	
Total Resuspension Volume (mi)	
Volume Applied to aecondary filter (ml)	

C-14	Celd Oconing	Structure	No. of St	No. of Structures		Dimensions		Mineral Class	<del></del>			1 = v	es, blank	= no
Grid	Grid Opening	Туре	Primary	Total		Width	Identification	Amphibole	С	NAM	Sketch/Comments			EDS
A	K3-6	M								: 1				
	H3-6	M			6	) }	A ?	80% inh	nt	7	-10 /s deb	n's		
	63-6	W			P	ا ا	b 6	10 % inter	1	7	% % debon	5		
	F3-6	W				T		1						
B	H4-1	M				L	1	Bul 10/	24/4	- 				
<u> </u>	(94-1	W							,,	·				
	Fd-1	W												
							·							
		<u>.</u> .		70000										

# Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instmment	JEOL 100∕10 S
Voltage (KV)	100 KV
Magnification	20KX)IOKX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: ID =	0.058 um
Primary filter area (mm2)	365
Secondary Filter Area (mm2)	
tQA Type	

Client :	ROR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1138
Date received by lab	iolistii
Lab Job Number:	222690
Lab Sampla Nurriber:	8119 24
.	-

Analyzed by	JB	_
Analysis date	idzuli	
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D	_
Counting rules (ISO, AHERA, ASTM)	Alt	
Grid storage location	Month Analyzo	<u>ed</u>
Scope Alignment	Date Analyze	d

F-Factor Calculation (Indirect Pro	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (mi)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class	· ··			1 = y	es, blank	= no
		Туре	Primary	Total	Length	Wklth		Arnphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	K5-3	W												
	H5-3	MΔ				1								
	65-3	N)			Post	P	70	Linky		5%	debris			
	F5-3	M			Park	3	70	% when t		5 %	Jehns	:		
B	(916-4	M		·	1 0 7									
	F6-4	ND						1Bu	Tol	24/4				
	Eb-4	W						11	77	7				
														-

Page	1	of	

	Environmental, Inc. os Structure Count
	0.0

Laboratory name:	REI
Instrument	JEOL 100/ND S
Voltage (KV)	100 KV
Magnification	(20KX)10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	Rark
Sample Type (A≃Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1141
Date received by lab	iolistii
Lab Job Number	222690
Lab Sample Number:	4119 25

F-Factor Calculation (Indirect Pro	eps Only):
Frection of primary litter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	<del> </del>

Analyzed by	JB
Analysis date	1924
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blank	= no	,
		Туре	Primary	Total	Length	Width	1	Amphibole	_ c_	NAM	Sketch/Comments	Sketch	Photo	Ę[	os_
A	H4-4	M													
	(24-4	M		·											
	FUN	M			Pu	hD A	80	Daiah	nt	50	le debr's				
	E4-4	M			By	26	50	To infor	4	50	Lalows	,			
B	E4-4	W)													
	E4-1	ND						Bul	0/24	K.					
	4	W							7 7				<u> </u>		
							7								
														Rev 3	3-201

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Page		

			ervoirs Environmental, Inc. Asbestos Structure Count
ratory name:	REt	Client :	Rark
	1 .	1 1	

Latmratory name:	REt
Instrument	JEOL 100/N) S
Voltage (KV)	100 KV
Magnification	20KX)toKX
Grid opening area (mm2)	0.011
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	Rark
Sample Typo (A=Air, D	
Air volume (L) or dijst a (cm2)	area (145
Date received by lab	10/18/11
Lab Job Number:	222690
Lab Sample Number:	811924

F-Factor Calculatio	n (Indirect Pr	eps Only):	
Fraction of primary file	erused		
. Total Resuspension V	plume (ml)		
Voluma Applied to sec (ml)	ondary filter		<del></del>

Analyzed by	J13
Analysis date	ाटीरमी।
Method (D=Direct, I=Inairect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Gric	Grid Opening	Structure	No. of St	ructures	Dime	nsions	identification	Mineral Class	: .			1 = y	es, blank	≃ no
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	44-4	M								!				
	144-4	M			(	Pro	A S	Opento	N	51	o obbie			
	G4-4	110			4	Dia	Ba	The work	nt	50	6 debris			
	F44	M				-			/	1				
7	K3-6	IW			:			1	Eurs	10/2	1/11			
	H3-6	W						//	1	/	'/			
	636	M						/						

### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101895-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 222690-1

**None Given** 

**Client:** 

R & R Environmental

Client Project Number / P.O.:

Client Project Description: R

Rocky Mtn. Power 3rd West Sub Station

**Date Samples Received:** 

October 18, 2011

Analysis Type:

TEM, AHERA

Turnaround:

3-5 Day

Date Samples Analyzed:

October 24, 2011

Client ID Number	Lab ID Number		Area Analyzed	Air Volume Sampled	Numtwr of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
			(mm²)	(L)	Detected	(s/cc)	(s/cc)	(s/mm²)
3W-101511-N.E.	EM	811919	0.0550	1695	ND	0.0041	BAS	BAS
3W-101511-S.E.	EM	811920	0.0550	1692	ND	0.0041	BAS	BAS
3W-101511-N.W.	EM	811921	0.0550	1692	ND	0.0041	BAS	BAS
3W-101511-S.W.	EM	811922	0.0550	1690	ND	0.0041	BAS	BAS
3W-101611-S.E.	EM	811923	0.0770	1136	ND	0.0044	BAS	BAS
3W-101611-N.E.	EM	811924	0.0770	1138	ND	0.0044	BAS	BAS
3W-101611-N.W.	EM	811925	0.0770	1141	ND	0.0044	BAS	BAS
3W-101611-S.W.	EM	811926	0.0770	1145	ND	0.0044	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity

Effective Filter Area = 385 sq mm

Average Grid Opening in mm<sup>2</sup> = 0.011

DATA QA

## RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101895-0; TDH: #30-0015

#### TABLE II. SUMMARY OF ANALYTICAL DATA

**RES Job Number:** 

**RES 222690-1** 

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

Rocky Mtn. Power 3rd West Sub Station

Date Samples Received:

October 18, 2011

Analysis Type:

TEM, AHERA

Tumaround:

3-5 Day

Date Samples Analyzed:

October 24, 2011

Cilent ID Number	Lab ID Ni	umber	Asbestos Mineral					Structures >5 Microns	**Excluded Structures	Asbestos Structures	
			•	Ast	estos Str	ucture Typ	es*	in Length		for	
			•	Fibers	Bundles	Clusters	Matrices	•		Concentration	
3W-101511-N.E.	EM	811919	ND	0	0	0	0	Ó	0	. 0	
3W-101511-S.E.	EM	811920	ND	0	0	0	0	0	0	0	
3W-101511-N.W.	EM	811921	. ND	0	0	0	. 0	0	0	0	
3W-101511-S.W.	EM	811922	ND	0	0	0	0	0	0	0	
3W-101611-S.E.	EM	811923	ND	. 0	0	0	0	0	0	0	
3W-101611-N.E.	EM	811924	ND	0	0	0	0	0	0	0	
3W-101611-N.W.	EM	81192 <b>5</b>	ND	0	0	0	0	0	Ō	0	
3W-101611-S.W.	EM	811926	ND	0	Ō	Ō	0	Ō	Ō	0	

<sup>\*</sup>See Analytical Procedure for definitions

ND = None Detected

<sup>\*\*</sup>C = Excluded from total due to lack of confirmation

<sup>\*\*</sup>L = Excluded from total for length less than 0.5 micron (AHERA only)

<sup>\*\*</sup>A = Excluded from total due to incorrect aspect ratio

#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

**B**undle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed,  $mm^2 = \# GO \text{ counted } x \text{ Average GO Area (mm)}$ 

Concentration, s/cc =  $\frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{\text{IL}}{\text{1000cc}}$ 

Filter loading,  $s/mm^2 = \frac{\# Asbestos structures}{Area Analyzed (mm^2)}$ 

GO = TEM grid opening



October 21, 2011

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 222866-1 None Given

Project Description:

PacifiCorp - 3rd W.

Substation

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 222866-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

**RES 222866-1** 

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

PacifiCorp - 3rd W. Substation

**Date Samples Received:** 

October 20, 2011

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

October 21, 2011

Client ID Number	Lab ID Ni	umber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
-			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-101811-N	EM	812935	0.0770	1136	ND	0.0044	BAS	BAS
3W-101811-S	/ EM	812936	0.0770	1132	ND	0.0044	BAS	BAS
3W-101811-E	EM	812937	0.0770	1134	ND	0.0044	BAS	BAS
3W-101811-W	EM	812938	0.0770	1136	ND	0.0044	BAS	BAS
BLANK	EM	812939	NA	0	NA			
BLANK	EM	812940	NA	0	NA	•		

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity
Average Grid Opening in mm<sup>2</sup> = 0.011

Effective Filter Area = 385 sq mm

Digita by Gir Vettra Date: 2011. 08:50

Digitally signed by Gina Vettralno Date: 2011.10.21

DATA QA

Due Time: 55

## REILAB RESERVOITS ENVIRONMENTAL, INC., SSOTLOGEN St. Denver, CO 80216 • Ph; 303 984-1986 • Fex 383-417-4275 • Toll Free :866 RESI-ENV

Pager: M3-50e-aoM

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## **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

## Asbestos Type

 $\begin{array}{lll} A &=& Amosite & F &=& Fiber \\ An &=& Anthophyllite & B &=& Bundle \\ C &=& Chrysotile & C &=& Cluster \\ Cr &=& Crocidolite & M &=& Matrix \\ T &=& Tremolite & & & & & \end{array}$ 

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron

1.80 length units = 0.5 micron

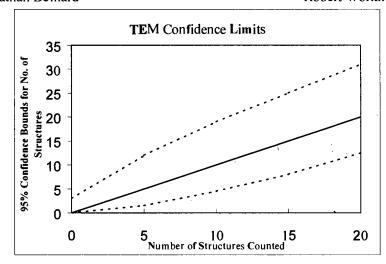
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bemard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman

Structure Types



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

#### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100(N) S
Voltage (KV)	100 KV
Magnification	(20KX JOKX
Grid opening area (mm2)	0.011
Scate: 1L =	0.28 um
Scale: 1D ≈	0.058 um
Primary filter area (mrn2)	365
Secondary Filter Area (mm2)	
QA Type	

Client:	Rall
Sample Type (A≍Air, D≂Dust):	· A
Air volume (L) or dust area (cm2)	1136
Date received by lab	10/20/11
Lab Job Number:	222866
Lab Samole Number:	812935

F-Factor Calculation (Indirect Preps Onty):

Frection of primary lifter used

Total Reauspension Volume (ml)

Volume Applied to secondary lifter

Analyzed by	JB
Analysis date	polzilu
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	12
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grld Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Mineral Class				1 = y	≃ no	
J		Туре	Primary	Total	Length	Width	idonanoation	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
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Ray 3-3008

# Reservoire Environmental, Inc. TEM Asbestos Structure Couni

Laboratory name:	REI
instrument	JEOL 100 (N) S
Voltage (KV)	100 KV
Magnification	(20KX 10KX
Grki opening area (mm2)	0.011
Scale: 1L =	0,2S um
Scale: 1D =	0.056 um
Primaly filter area (mm2)	385
Secondary Fitter Area (mm2)	·
QA Tvoe	

Client:	Rall
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1132
Date received by lab	olzoki
Lab Job Number:	222866
Lab Sample Number:	812936

Analyzed by	JB
Analysis date	10/21/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage kication	Month Analyzed
Scooe Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):							
Fraction of primary filter used							
Total Resuspension Voluma (ml)							
Volume Applied to secondary litter (m()							

Grid	Grki Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Class				1 = y	1 = yes, blank = no		
		Туре	Primary	Total	Length	Width		Amphibote C NA		NAM	Sketch/Comments	Sketch	Photo	EDS	
A	H2-6	W													
	62-6	M)			P	wo	A	80%in	mif		To delan	<u>s</u> .			
	F2-6	M			P		4 ~	A	·						
	EZ-10					y)	L	- /		•					
13	H2-6	m					1 Ban	10/21/11							
	1+2-3	M				/	/ /								
	62-6	M													
								•							
1															

# Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory hams:	REI
Instrument	JEOL 100(N) S
Voltaae (KV)	100 KV
Magnification	20KX JOKK
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	9

Client:	Rall
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1134
Date received by lab	10/20/11
Lab Job Number:	222866
Leb Samole Number:	812937

Analyzed by	JB
Analysis date	10/21/11
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	- T- D
Counting rules (ISO, AHERA, ASTM)	AH-
Grtd storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):						
Fraction of primary filter used						
Total Resuspension Volume (mi)						
Volume Applied to secondary filter (ml)						

Grid	Grid Opening	Structure	No. of St	lo. of Structures Dimension		Dimensions		Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width	Identification	Amohibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	H4-1	<u> M</u>								•	,			
	614-1	W)				F	m A	70%.	nhu	rf	3-5%	debr	5	
	F4-1	M				P.	mp 13	80%.	nhu	it	3-5 %	ebris		: 
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## Reservoirs Environmental, inc. TEM Asbestos Structure Count

Laboraton/ name:	REI
Instrument	JEOL 100(N) S
Voltage (KV)	100 KV
Maonification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primaly filter area (mm2)	385
Secondary Filtar Area (mm2)	
QA Type	

Client :	Roll
Sample Type (A=Air, D=Dust):	A
Air voluma (L) or dust area (cm2)	1,134
Date received by lab	10/20/11
Lab Job Number:	222866
Lab Sample Numben	812938

F-Factor Calculation (Indirect Pregs Only):						
Fraction of primary filter used	·					
Total Resuspension Volume (mi)						
Volume Applied to secondary fitter (ml)						

Analyzed by	JB
Analysis date	10/21/11
Method (ID=Direct, i=Indlrect, IA=indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH-
GrM storage location	Month Analyzed
Scooe Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	No. of Structures		Dimensions identification Mineral Class		ctures Dimensions		Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Wkith		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS		
A	F2-3	W														
<u> </u>	E2-3	M)						,					_			
	C2-3	M			Pa	D A	80	Loupert	5	-7	of debris					
	B1-3	W			Pa	DA	90	of inter	4	5-7	in Chris					
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#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

**Bundle:** is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed,  $mm^2 = \# GO \text{ counted } x \text{ Average } GO \text{ Area } (mm)$ 

Concentration, s/cc =  $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{11}{1000\text{cc}}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening



October 21, 2011

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 222867-1 None Given

Project Description:

PacifiCorp - 3rd W.

Substation

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 222867-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

**President** 

## RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 222867-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

**Client Project Description:** 

PacifiCorp - 3rd W. Substation

**Date Samples Received:** 

October 20, 2011

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

October 20, 2011

Client ID Number	Lab ID N	umber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-101911-N	EM	812941	0.0770	1128	<b>N</b> D	0.0044	BAS	BAS
3W-101911-S	EM	812942	0.0770	1128	ND	0.0044	BAS	BAS
3W-101911-E	EM	812943	0.0770	1126	1	0.0044	0.0044	<b>13</b> .0
3W-101911-W	EM	812944	0.0770	1126	ND	0.0044	BAS	BAS
BLANK	· EM	812945	NA	0	NA			
BLA <b>N</b> K	EM	812946	NA	0	NA			

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

**BAS = Below Analytical Sensitivity** Average Grid Opening in mm<sup>2</sup> = 0.011 Effective Filter Area = 385 sq mm

DATA QA

### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE II. SUMMARY OF ANALYTICAL DATA

**RES Job Number:** 

RES 222867-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description: PacifiCorp - 3rd W. Substation

Date Samples Received:

October 20, 2011

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

October 20, 2011

Client ID Number	Lab ID Number		Asbestos Mineral	Asbestos Structure Types*				Structures >5 Microns in Length	**Excluded Structures	Asbestos Structures for	
			-	Fibers	Bundles	Clusters	Matrices		•	Concentration	
3W-101911-N	EM	812941	ND	0	0	0	0	. 0	0	0	
3W-101911-S	EM	812942	ND	0	0	0	0	0	0	. 0	
3W-101911-E	EM	812943	Chrysotile	0	1	0	. 0	0	0	1	
3W-101911-W	EM	812944	ND	0	0	0	0	. 0	0	0	
BLANK	EM	812945	NA								
BLA <b>N</b> K	EM	812946	NA								

<sup>\*</sup>See Analytical Procedure for definitions

ND = None Detected

<sup>\*\*</sup>C = Excluded from total due to lack of confirmation

<sup>\*\*</sup>L = Excluded from total for length less than 0.5 micron (AHERA only)

<sup>\*\*</sup>A = Excluded from total due to incorrect aspect ratio

Due Oate: 10. 20 21 3624

Contact

## Reservoirs Environmental, inc. seoi Logan St. Deiwar, CO 80216 • Ph: 303 984-1988 • Fax 303-477-4275 • Toff Free :586 RESI-ENV

Pager: 309-509-2098 **CONTACT INFORMATION:** INVOICE TO: (IF DIFFERENT) 12 Environmental, The 47 W, 90005, &B Sandy, Utal 84070 Company Fax Callipager Celi/pager: Project Number an4/or P.O. #: DAVEQUEENVIRO.COM Project Description/Location: Paythers - 3rd w. Substation REQUESTED ANALYSIS **VALID MATRIX CODES LAB NOTES** ASBESTOS LABORATORY HOURS; Weekdays; 7am - Tpm RUSH (Same Day) PRIORITY (Next Day) Bulk = B Air = A(Rush PCM = 2hr, TEM = 6tir.) Dust = 0 Paint = P CilEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm Wipe = W 501 = SMetal(s) / Dust RUSH \_\_\_ 24 hr. \_\_\_ 3-5 Day 5wab = SW F = Food Quam, \*\*Prior notification is RCRA 8 / Metals & Welding Drinking Water = DW | Waste Water = WW Point Count RUSH 5 day 10 day required for RUSH Fume Scan / TCLP O = Other ISO, +/-rect Preps turnarounds.\*\* "ASTM E1792 approved wipe media only" 24 hr. \_\_\_ 3 day \_\_\_ 5 Day Organics MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm Long report, METALS - Analyte(s) RCRA 8, TCLP, Wateing Furre, SHA E.coll O157:H7, Colifonus, S.aureus 24 tir. 2 Day 48 Hr. 3-5 Day Salmonella, Listeria, E.coll, APC, Y & M Mold RUSH 24 Hr 48 Hr 3 Day - Short report, \*\*Turnaround times satablish a taboratory priority, aubject to faboratory volunw and are not guaranteed. Additional fees apply for afterhours, weekands and holidays." Matrix Code Special Instructions: EM Number (Laborate Date Time Use Only) Collected Collected 2 Client sample ID number (Sample ID's must be unique) MICROBIOLOGY hh/mm a/p mm/dd/yy - W 5 Blank 8 9 10 Number of samples received: (Additional samples shall be listed on attached long form.) NOTE: REI will analyze incoming earning based upon information received and will not be reaponable for en ora or omissiona in calculationa resulting from the inaccuracy of original data. By signing dientecompany representative agrees that submission of the following samples to requested analysis as incleated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, fallure to comply with payment terms may result in a 1.5% monthly interest sureharge. Date/Time: 10 Relinguisited By: Sample Condition: On Ice Sealed Intact Laboratory Use Only Yes / No Yes / No Yes) No Temp. (P°) Date/Time: 10 20 Received By: Results: Contact Phone Email Fax Date Time Initials Contact Phone Email Fax Date Time Initials

Date

Time

Initials

Contact

Phone Email Fax

Date

Time

Initials

Phone Email Fax

## Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

#### Asbestos Type

#### Structure Types

A = Amosite	F = Fiber
An = Anthophyllite	B = Bundle
C = Chrysotile	C = Cluster
Cr = Crocidolite	M = Matrix
T = Tremolite	

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

Sizing Conversion

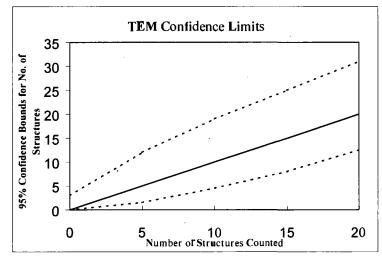
1 length unit = 5 mm on screen = 0.278 micron

1.80 length units = 0.5 micron 18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM** Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bemard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmeniai, Inc.
TEM Asbestos Structure Count

Latioratory name:	REI
instrument	JEOL 100 N S
Voltage (KV)	100 KV
Magnification	20KX OKX
Grkl opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	·
QA Type	

/EM Asbestos Structure Count						
Client :	1200 Walsh					
Sample Type (A=Air, D=Dust):	A					
Air volume (L) or dust area (cm2)	1/28					
Date received by lab	10/20/11					
Lab Job Number:	222867					
Lab Sample Number:	81294)					

F-Factor Calculation (Indirect Preps Only):					
Fraedon of primary filter used					
Total Resuspension Volume (ml)					
Volume Applied to secondary filter (ml)					

Analyzed by	N
Analysis date	10/20
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
Counting miles (ISO, AHERA, ASTM)	AH
Grid storage location	Monttt Analyzed
Scooe Alignment	Date Analyzed

Dalm QA JB placks

Grkl	Grid Opening	Structure	No. of Stmctures		Dimensions		Identification	Mineral Class				1 = yes, blank = no		
		Туре	Primary	Total	Length	Width		Amphibole	Ç	NAM	Sketch/Comments	Sketch	Photo	EDS
A	L4-1	NO												
•	K4-1	2			,		Prop A	~601.int	a cA	~5/	debris			
	44-1	N					Prex B	~601.int 701.inta Jenflir	o1	57.	debus			
	H3-4	NO						Senffr	en.	0/2	0/11			
3	(15-3	MD						(1 )	,					
	F5-3	M						_		. 1				
	F5-3	2												
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Reservoire Environmental, inc.
TEM Aabestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 N &
Voltaae (KV)	100 KV
Magnification	20KX 0KX
Grid opening area (mm2)	0.011
Scale: 1L≃	0.28 um_
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Cilent :	HOUSH
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1/28
Date received by lab	10/20/11
Lab Job Number:	222867
Lab Sample Number:	812942

Analyzed by	1/L
Analysis date	10/20
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA ASTM)	AH
Grid storage location	Month Analyzed
Scooe Alignment	Date Analyzed

F-Factor Calculation (Indirect Pr	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Votume Applied to secondary filter (ml)	

Grki (	Grid Opening	Structure	No. of Str	uctures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
		Туре	Primaty	Total	Length	Width	, , , , , , , , , , , , , , , , , , , ,	Amohibole	С	NAM_	Sketch/Comments	Sketch	Photo	EDS
A	K6-1	NO										·		
	H6-1	M					Prop	A ~90/. i	ntac	<u>-</u>	~5% det	ris		
	96-1	NO		-:: · · · ·			Preo	BiA						
B	F5-4	NO						Jeny	non	w	20/11			
	25-4	MD		· · · · · · · · · · · · · · · · · · ·										
	F6-4	NO								,				
	26-4	M		·							·			

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 N S
Vollage (KV)	100 KV
Magnification	(20KX)0KX
Grid opening atea (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyce	

Client:	WatshRet
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1/21
Date received by lab	10/20/11
Lab Job Number:	222867
Lab Sample Number:	812943

Analyzed by	N
Analysis date	10/20
Method (D=Dlrect, l=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Pr	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (mi)	
Volume Applied to Secondary filter (ml)	,

Grid	Grid Opening	Streture	No. of St	ructures ·	Dimer	nsions ·	Identification	Mineral Class				1 = y	= no	
		Туре	Primary	Total	Length	Width	,	Amphibola	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	E4-3	NO						,						
	C4-3	B		{	4.5	2	00				1			
	B4-3	W					Prope	A 957.	inta	ct :	25% debi	is		
	23-6	ND					Pre				15%, de	pris		
B	C15-6	MO					,	fen fr	ren	1	10/11		,	
	F5-6	M				·				-				
	E5-6	ND,					·							
	·													
							,	•						

### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 N
Voltage (KV)	100 KV
ivlagnification	(20KX)0KX
Grkl opening area (mm2)	0.011
Scale: IL=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client:	1K Watsh P
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	112le
Date received by lab	10/20/11
Lab Job Number:	222867
Lab Sample Number:	812944

Analyzed by	N
Analysis date	10/20
iMethod (D=Oirect, I=Indirect, L=Indirect, ashed)	D
Counting rules (ISO, AHERA; ASTM)	AH
Grid storage location	Month Analyzed
Scooe Alignment	Date Analyzed

F-Factor Calculation (Indirect Pr	reps Only):
Fraction of primary filter used	
Total Resuspension Volume (mi)	
Volutine Applied to Secondary filter (ml)	

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions ·	Identification	Mineral Class	Mineral Class			1 = y	= no	
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	946	M									·			
	746	M					Prop	A 70/.	Inta	cari	5%. debri.	5		
	246	M					Prop	BA						
	C4-6	NO						Jen flu	en.	10/	20/11			
B	85-1	M										·		
	25-3	M								,				
	05-3	8												
											·			
								.,						

#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

**B**undle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration, s/cc =  $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{i}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{\text{IL}}{\text{1000cc}}$ 

Filter loading, s/mm<sup>2</sup> =  $\frac{\text{\# Asbestos structures}}{\text{Area Analyzed (mm}^2)}$ 

GO = TEM grid opening



October 24, 2011

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report:

RES 222919-1 None Given

Project # / P.O. #
Project Description:

3rd West Sub Station

RMP

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 222919-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

## RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE LOTEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 222919-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

**Client Project Description:** 

3rd West Sub Station RMP

Date Samples Received:

October 21, 2011

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

October 22, 2011

Client ID Number	Lab ID N	umber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
•			(mm²)	(L)		· (s/cc)	(s/cc)	(s/mm²)
3W-102011-E	EM	813441	0.0990	955	ND	0.0041	BAS	BAS
3W-102011-S	EM	81344 <b>2</b>	0.0880	951	ND	0.0046	BAS	BAS
3W-102011-N	EM	813443	0.0880	950	ND	0.0046	BAS	BAS
3W-102011-W	EM	813444	0.0880	950	ND	0.0046	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity

Effective Filter Area = 385 sq mm

Average Grid Opening in mm<sup>2</sup> = 0.011

DATA QA



**RES 222919** 

Pager: 303-509-2098

	INVOICE TO: (IF	DIF	FER	ENT)	·									ONT/	CT	INF	ORI	MATION:			
company: RER Empronmental	Cempany:						tact:	$\Box$	سو	زهاز	ske	lex				_1_	emac				
Address: 47 W. 9000 5	Address:					Pho											nens:				
Sandy W. 84043						Fee											BOX;				
						Col	/page	- 8E	) t :	5411	-10	35				c	at/pe	\$67.			·
Pmject Number and/or P.O. e:						°m	1			Emali A											
Project Detailptions.ocation: 330 West Sub Startism (CNIP							<u>a</u>	ave	<u>(6)</u>	re	W	<u>72.</u>	سى								
ASBESTOS LABORATORY HOURS: Weekdays: 7am - Tpm		Т			<u>-</u>	REQU	EST	ED /	ANA	LYSI	S	-	-	$\top$	V	ALI	D M	ATRIX CO	DES	LAI	NOTES:
PLM / PCM / TEM / RUSH (Same Day) X PRIORITY (Next Day	)STANDARD	T					Π	П	Т			Т			Alt	r = A		Bu	/k = B		
(Rush PCM = 2hr, TEM = 6hr.)	· <del></del>	1				1					1				Du	et = [	)	Pa	Int = P		
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MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pr						ž				8 <b>5</b>	8	S		1				İ			
E.coli O187:H7, Colifemes, S.aureus24 hr2 Day	3-5 Day	Long report,	7402	OSHA		<u> </u>	1			7 5	antification	antifica	Cation, OR OTH	1				İ		<b></b>	·
Salmonella, Listeria, E.coli, APC, Y & M48 Hr3-5 Day		8		2 ő	囊		-	يا		벁	121:	Quantify	E 8			İ					
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**Turnaround timas establish a laboratory pdority, subject to laboratory volume and a apply for afterhours, weekends and iselidays.**	re not guarantaed. Additional fees	ğ.		M. 74	œ	₹ .	ᇦ		‡	a b	<del> </del>		. 5	1 8						<b></b>	
		Short report,	AHERA.	7400A, 7400B,	- Total, Respirable	METALS - Analyte(s) RCRA 8, TCLP, Welding Furne,	ORGANICS - METH	Satmonella: +/-	* H	Aerobic Plate Count: E.cofi: 4- or Qua	Сойоть:	Y&M: +/-	¥ 5	Sample Volume	_	륁	# Containers				
Special instructions:		55	₹	77	7	2 8.	M	£ 5	Listeria:	Aerobic E.coff:	8	8 2	Modd:	Į į	9	ğ	踵	Date	Time		<b>Niber</b> (Labaratory lee Only)
Ollanda and I I american		를			DUST	15 S	ğ	Ø π	_					1 🖁	(L) / Arrea	Matrix Code	8	Collected	Collected	`	100 Only)
Cilent sample ID number (Sample ID's must be unique	)	15	芝		9	<b>E</b> &	<u> </u>	1	MIN	ROBI	ULOG	T :	3	_	-			mw/tid/yy	hh/mm a/p	813	111
1 3W-1020(1-E		╄	-		-	ļ	<b></b> -	┼-┼-	+		╢	+	955			A	-11	deolu		1013	
2 3W-102011 - S			Ш					Ш					<b>&amp;</b>	95	1	Ш	$\perp$				42
3 3W-102011-N									ŀ					95	0		1				43
4 3W-102011 - W											$\Box$	$\top$		95	_	1	7			1	44
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analysis as indicated on this Chain of Custedy shall constitute an analytical services agreem	ent with payment terms of NET 30 day	A M	une in	eemply	with p	aymant k	ımıs ı	nay rei	ult m	a 1.8%	mentt	ly Inla	rest surrire	rga							<del> </del>
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## **Attachment I**

Key to Count Sheets
Count Sheets
Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

### Asbestos Type

### Structure Types

Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
т	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

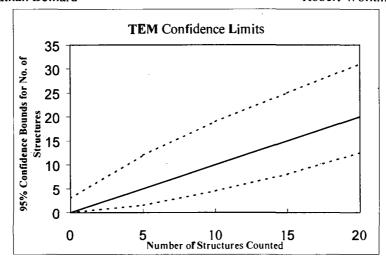
Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

### **TEM Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bemard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

## Reservoirs Environntentai, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
instrument	JEOL 100 N
Voltage (KV)	100 KV
Magnification	20tOX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um_
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	NA
QA Type	No QC

Client :	RAR
Sample Type (A=Alr, D=Dust):	A
Air volume (L) or dust area (cm2)	955
Date received by lab	10/21/11
Lab Job Number:	222919
Lab Sample Number:	813441

Grid storage location	Month Analyzed
Counting rules (ISO, AHERA, ASTM)	A17
Method (D=Direct, i=indirect, IA=Indirect, ashed)	10
Analysis date	10/21/11
Analyzed by	-610

F-Factor Calculation (Indirect Pr	eps Oniy):
Fraction of primary filter used	
Total Resuspension Volume (mi)	
Volume Applied to secondary litter (mi)	(

Grid	Grid Opening	Grid Opening	Grid Opening	Structure	No. of Structures		Dimensions		Identification	Mineral Class				1 = yes, blank = no		
		Туре	Primary	Total	Length	Width		Amphibole	_с	NAM	Sketch/Comments	Sketch	Photo	EOS		
A	B4-4	M														
	1246	NO				P	PA	701. Intac	- 5.	10/.	debris					
	126-4	ND					Prop (	701. 114ac		,						
	26-4	ND						Jen	Mu	~ 10/	m/h					
	06-4	M														
3	F4-6	m														
	24-6	MD														
	CV1-6	NO					·									
	174-6	M					,	,								

## Reservoirs Environmental, inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 N (S)
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area	
(mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D = Primary filter area	0.056 um
(mm2) Secondary Filter Area	385
(mm2)	N/A
QA Type	node

RIR
A
951
10/21/11
222019
813442

F-Factor Calculation (Indirect Preps Only):  Fraction of primary fitter used  Total Resuspension Volume (mi)				
Fraction of primary filter used	,			
Total Resuspension Volume (mi)				
Volume Applied to secondary fatter (mi)				

Analyzed by	-pl
Analysis date	10/22/11
Method (D=Direct, l=Indirect, iA=indirect, ashed)	. 0
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	identification	identification Mineral Class			1 = ves, blank = no			
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
· A-	c4-3	8									·			
	HY-3	M					Rop	A-60/.in	tact	5	1. debris	•	·	
	94-3	M					Prop							
	63-6	M						Jan	Kres	_ 10]	er/1			
B	HU-4	ND						, ,		,	, , , , , , , , , , , , , , , , , , ,			
	94-4	W			,							_,		
	H5-6	2												
	A5-6	2												
														!

## Recervoire Enylronmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 N (S)
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	NA
QA Type	node

Client :	RIR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	950
Date received by lab	10/21/11
1.ab Job Number:	222019
Lab Sample Number:	813443

F-Factor Calculation (Indirect Preps Only):							
Frection of primary litter used							
Total Resuspension Volume (mi)							
Volume Applied to secondary litter (ml)	,						

Analyzed by	-pl
Analysis date	10/122/11
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	0
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid			Structure No. of Structures		Dimensions Iden		Identification Mineral Class					1 = yes, blank = no		= no
		Type	Primary	Total	Length	Width	Amphibole		С	NAM	Sketch/Comments	Sketch	Photo	EOS
1	H5-4	M						·	·		·			
	(15-4	W					Prep	A 90/. into	r c4	251.	debris	·		
•	<b>15-4</b>	M					Prop	4 90/. into						
	25-4	M					·	Jen 1	Tren	10/2	2/11			<u> </u>
B	84-10	NO												
	W-6	ND								,				
	134-6	M												
	83-le	ND												
	,					1.	,,							
		,							·					

# Reservoirs Environmental, Inc. TEM Aspessos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 N (S)
Voltage (KV)	100 KV
Magnification	20KX OKX
Grid opening area (mm2)	0.011
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	n/A
QA Type	no ac

RIR
A
950
10/21/11
222019
813444

F-Factor Calculation (Indirect Preps	Only):
Fraction of primary filler used	
Total Resuspension Volume (mi)	,
Volume Applied le eccondary tilter (mi)	

Analyzed by	-pl
Analysis date	10/22/11
Method (O=Oirect, I=Indirect, IA=indirect, ashed)	0
Counting rules (ISO, AHERA, ASTM)	44
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Oinie	Oiniensions identificat		identification Mineral Class				1 = yes, blank = no		
		Туре	Primaty	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
1	H4-4	M							,					
	94-4	M				8	nep A	1.0.17	es -	5/,0	lebris	-		
	43-3	NO				·	Prer	BNA				ļ		!
	846	M						Am flo	اخرا	ofer	14			
3	L4-1	W												
	X4-1	ND												
	14-1	MD												
	(14-)	M	(1											
														<u> </u>

#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

**B**undle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Eauations Used for Calculations**

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration,  $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{i}{\text{Voiume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening



October 25, 2011

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 223009-1 None Given

Project Description:

3rd West Sub Station -

RMP

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AlHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 223009-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

## RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 223009-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

3rd West Sub Station - RMP

**Date Samples Received:** 

October 24, 2011

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

October 25, 2011

Client ID Number	Lab ID Number		Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading	
		•	(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)	
3W-102111-E	EM	814010	0.1100	741	ND	0.0047	BAS	BAS	
3W-102111-S	EM	814011	0.1100	741	ND	0.0047	BAS	BAS	
3W-102111-N	EM	81401 <b>2</b>	0.1100	741	1	0.0047	0.0047	9.1	
3W-102111-W	EM	81401 <b>3</b>	0.1100	741	ND	0.0047	BAS	BAS	

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

**BAS = Below Analytical Sensitivity** 

Effective Filter Area = 385 sq mm

Average Grid Opening in mm<sup>2</sup> = 0.011

Gina Vettraino Date: 2011.10.25 15:18:46 -06:00\*

DATA QA

## RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE II. SUMMARY OF ANALYTICAL DATA

**RES Job Number:** 

RES 223009-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

3rd West Sub Station'- RMP

Date Samples Received:

October 24, 2011

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

October 25, 2011

Client ID Number	Lab ID Number		Asbestos Mineral	Asl	bestos Str	ucture Typ	pes*	Structures >5 Microns in Length	**Excluded Structures	Asbestos Structures for	
			•	Fibers	Bundles	Clusters	Matrices	_		Concentration	
3W-102111-E	EM	814010	ND	0	0	0	0	. 0	0	0	
3W-102111-S	EM	814011	ND	0	0	0	0	0	0	0	
3W-102111-N	EM	81401 <b>2</b>	Chrysotile	0	1	0	0	0	0	1	
3W-102111-W	EM	814013	ND	. 0	0	0	0	0	0	0	

<sup>\*</sup>See Analytical Procedure for definitions

ND = None Detected

<sup>\*\*</sup>C = Excluded from total due to lack of confirmation

<sup>\*\*</sup>L = Excluded from total for length less than 0.5 micron (AHERA only)

<sup>\*\*</sup>A = Excluded from total due to incorrect aspect ratio

Due Date: 10 - 25 Due Time: 84

# REILAB RESIETVOITS Environmental, Inc. 5801 Logan St. Denver, CO 80216 • Ph: 303 964-1888 • Fex 303-477-4275 • T di Free :868 RESI-ENV

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	and Ul. 840 ED						Fax	-		•							Fax						
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Project Number							Pin		Datve				_										
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Client sa	mple ID number (Sample ID's must be unique	)	2	TE CO Semi	2€	DUST	# S	8		MIC	ROBI			3	₹ 3		D #	mma		hh/mm e/p			
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## **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

# Asbestos Type A = Amosite An = Anthophyllite C = Chrysotile Structure Types F = Fiber B = Bundle C = Cluster

Cr = Crocidolite T = Tremolite

ND = no structures detected

M = other structure associated with a matrix

M = Matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

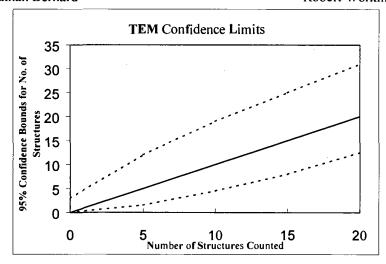
Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 N(S)
Voltage (KV)	100 KV
Magnification	20iQL 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.058 um
Primary filter area (mm2)	385
Secondary Filter Araa (mm2)	
QA Type	·

ROR
A
741
10/24/11
223009
814010

F-Factor Calculation (Indirect Preps Only):									
Fraction of primary filter used	÷								
Total Resuspension Volume (mi)									
Volume Applied to secondary filter (ml)									

Analyzed by	JB
Analysis date	10/25/4
Method (D=Direct, I=Indirect, IA=indirect, ashed)	5'
Counting miles (ISO, AHERA, ASTM)	AH
Grid storage iocation	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Class				1 = y	es, blanit	= no
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	H4-3	MD							·				,	
	643	M												
	F4-3	W				Prop	AoB	80% int	nt	7%	debas			
	F5-1	M				1				V				
	E5-1	W					18	10/25	u					
B	14-4	M					17	. ( ) /						:
	614-4	ΔV			·									
	F4-4	M												
	64-6	M									•			
	F4-6	MV												

Reservoirs Environmental, inc.
TEM Asbestos Structure Count

Laboratory name:	REI .
Instrument	JEOL 100 N(S)
Voltage (KV)	100 KV
Magnification	<b>EOKX</b> IOKX
Grld opening area (mm2)	0.011
Scale: 1L o	0,28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	ROR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	741
Date received by lab	10/24/1
Lab Job Number:	223009
Lab Sample Number:	8140181

Analyzed by	JB
Analysis date	10/25/4
Method (D=Direct, I=Indirect, IA=indirect, ashed)	5
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect P	reps Only):	
Fraction of primary filter used		
Totsi Resuspension Volume (mi)		
Volume Applied to secondary fitter (ml)		·······

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	identification	Mineral Class				1 = yes, blank = no		
		Туре	Primary	Total	Length	Wkith		Amphibole	С	NAM	Sketch/Comments_	Sketch	Photo	EDS
A	K4-1	M											,	
	A4-1	MD:		,	P	ns /	J 60	Le in bruk	r.	1-3	La debris			
	694	W			P	10	60	ho in but		-3%	debris			
	(43-3	M				γ								
	F3-3	NO		·			/	Ben / 10/2	-/1					
B	64-6	NO							7	·				
	K4-6	M					,							
	H4-6	W												
	15-1	M												
	K5-1	M									,			

# Reservoire Environmental, inc. TEM Asbestos Structure Count

Laboratory name:	REI .
instrument	JEOL 100 N (S)
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D=	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

RoR
A
741
10/24/1
223009
स्रान्ग्र

Analyzed by	JB
Analysis date	10/25/4
Method (D=Direct, I=Indirect, IA=tndirect ashed)	1 2
Counting rules (ISO, AHERA, ASTM)	At
Grid storage locatkın	Month Analyzed
Scooe Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only): Fraction of primary filter used	
Fraction of primary filter used	
Total Resuspension Volume (mi)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure	No. of St	nctures	Dime	nsions	Identification	Mineral Class			[ ]	1 = y	= no	
		Туре	Primary	Total	Length	Width	·	Amphibole	c	NAM	Sketch/Comments	Sketch	Photo	EDS
A	44-1	MD							·				,	
	174-1	ND										-	·	
	14-1	W)			R	ws s	AaB	260°60 int	nt	Si	debris			
	65-1	W												
	K5-1	W)						Bul	25/1		. ,			
B	614-3	M		L										
	F4-3	N						·						
	£4-3	B			12	(0	(DX		1					
	F5-3	W						·						
	155-3	W						·						

### Reservoire Environmental, inc. TEM Asbestos Structure Count

Laboratory name:	REI
instmment	JEOL 100 N (S)
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	·
QA Type	

Kork A
A
741
0/24/1
223009
814013

Analyzed by	邛
Analysis date	10/25/4
Method (D≂Oirect, l≕Indirect, IA≂Indirect, ashed)	15
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Atlanment	Date Analyzed

F-Factor Calculation (Indirect Pre	eps Only):
Fractism of pdmary filter used	
Total Resuspension Volume (mi)	
Volume Applied to secondary filter	

Grid	Grid Opening	Structure	No. of St	mctures	Dimensions		Dimensions		Identification	Mineral Class				1 = yes, blank = no		
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS		
A	H3-6	M														
	613-6	W>:					1				,					
	F3-6	M		ē.		Pup	A	Ohenha	it	5-	7% debni	<b>&gt;</b> _		,		
	E3-6	2				DWD	3	Do/ointro	4	5	Top debrie					
	13-10	M							1		,					
B	44-4	M						1	en/	10/2	5/11					
	644	M						//		1	7					
	Fyz	M														
·	64-3	MD														
	F4-3	M				·										
										· · ·		<del></del>		Rev 3-2		

#### <u>Analytical Procedures – AHERA</u>

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed,  $mm^2 = \# GO \text{ counted } x \text{ Average } GO \text{ Area } (mm)$ 

Concentration,  $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{\text{IL}}{1000cc}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening

Due Date: 10 - 2U
Due Time: 835

# REI LAB RESERVOITH ENVIRONMENTAL, INC. 5801 Logan 8I. Detwer, CO 80216 - Ph: 303 964-1986 - Fax 303-477-4275 - Toil Free :808 RESI-ENV

	Pager : 303-60													,				
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(Rush PCM = 2hr, TEM = Bhr.)	·· <del>-</del>	]	- 1		1 .		11					1	Dust	= D		Paint = P		
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MICROBIOLOGY LABORATORY HOURS: Weekdays: 911/11 - 5p	m	12	S B					6	ا ـ [ا	15 Pg	2 S S S	<b>—</b>	T	T			1	
E.coli O157:H7, Coliforans, 8.attreus 24 hr. 2 Day	3-S Day	1 8	8 1	\$	1 1:	g l	11	1	5 [윤	Quantification Quantification	other ou	i `	1	1 1			<b></b>	
Salmonelta, Listeria, E.coli, APC, Y & M48 Hr3-5 Da		夏	₹ છુ	AHSO I	g [ ] j				물	Quem		1					<del></del>	
	_48 Hr3 DayS Day	E G	Level II, ro-vac,		Me(s)		-	‡    <u>‡</u>			S OR	ľ	-		•		<u> </u>	
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## **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

### Asbestos Type

#### Structure Types

•				
<b>A</b> :	=	Amosite	F =	Fiber
An:	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr :	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

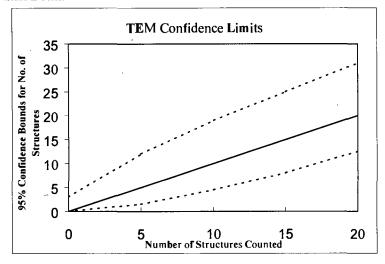
Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM** Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bemard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

# Reservoirs Environmental, inc. TEM Asbestos Structure Count

Laboratory name:	REI
instrument	JEOL 100 NS
Voltage (KV)	100 KV
Magnification	20KX POKX
Grld opening area (mm2)	0.011
Scale: 1L =	0,28 um
Scale: 1D =	0.058 um
Primary filter area (mm2)	385
Secondary Filter Area (mrn2)	~ /A
QA Type	no QA.

RTR
A
780
10/25/11
223071
814334
֡

F-Factor Calculation (Indirect Preps Only):

Scooe Alignment	Date Analyzed
Grid storage location	Month Analyzed
Counting rules (ISO, AHERA, ASTIM)	AH
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
Analysis date	10/25/11
Analyzed by	-1K

Grid	Grid Opening	Structure	No. of Structures	Dimensions	- Identification	Mineral Class
	'	· 				<u> </u>
Туре		no	QA.	Volume Applied to s (ml)	econdary filter	
condaty Filter Area n2)		~ 1	A	Total Resuspension		
n2)		itsr used				

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width		Ampiribole	С	NAM_	Sketch/Comments	Sketch	Photo	EOS
A	K5-6	M		,										
	45-6	M					Prep	A 80/. 1	Mre	- 3-	5/ debis			
	(15-b	NO					Prep	Q M						
	P5-6	<u>M</u>						Ser W	un	10/2	14			
	<del>+</del> 4-4	NO					·	////						
0	K3-4	NO						·	·					
	H3-4	100												
	93-4	M					·					·		
	F3-4	W	EPC LY						1					
	234	MD						-						

### Reservoirs Environmental, inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 NS
Voltage (KV)	100 KV
Magnification	20KX POKX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondaly Filter Area (mm2)	r/A
QA Type	no QA

r R
0
25/11
3071
331

Analyzed by	-1K
Analysis date	10/25/11
Method (D=Direct, i≠IndIrect, IA=IndIrect, ashed)	· D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Pr	reps Only):	
Fraction of primery litter used		
Total Resuspension Volume (ml)	;	
Volume Applied to secondary filter		

Grid	Grid Opening	Structure	No. of Stn	nctures	Dime	nsions	Identification	Mineral Ciass				1 = y	es, blank	= no
		Туре	Primaiy	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	23-6	W						1						
	C3-6	ND					Prox	A Meo/.	Mo	CA.	~5). debr	اد		
	83-6	W		•			Drep	B ~ A	·					
	H5-3	ND						Sen 1	Kron	. 16/	25/11			
	95-3	ND						/ /	·		,			
B	93-1	M		<del></del>										
	£3-1	ND						·						
	F2-6	M												
	26-4	MO												
	a-4	NP		. ;									-	

# Reservoirs Environmental, inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instalment	JEOL too N(S)
Voltage (KV)	100 KV
Magnification	20100000
Grid opening area (mm2)	0.011
Scale: IL=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	~/A
QA Type	no QA

0.0
RTR
A
780
10/25/11
223071
814332

Analyzed by	-1K
Analysis date	10/25/11
Method (D=Direct, i=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):								
Fraction of primary filter used								
Total Resuspension Volume (ml)								
Volume Applied to secondary filter (mf)								

Grid	Grki Opening	Stricture	No. of Str	ructures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Wkith		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EOS
A	45-4	<u> </u>												
	<del>\$5-4</del>	NO				Pres	PATO	/. Intact	, ~#	5/.de	bris			
	ESA	M				Pn	Y B 90	1. Intach	يمند	7. 2	ebris			
	C5-1	NP						Sen	1/2	m	0/25/11			
	B5-1	M							10					
B	44-3	MO												
	(14-3	W												
	F4-3	M												
	64-3	ND				,								
	(4-3	M												

Rev 3-2009

### Reservoirs Environmental, inc. TEM Asbesios Structure Count

Laboratory name:	REI
instrument	JEOL 100 N(S)
Voltage (KV)	100 KV
Magnification	2010X 2010X
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scate: ID =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	~ /A
QA Type	no QA

Client :	RTR
Sample Type (A=Air, 0=Dust):	A
Air volume (L) or dust area (cm2)	780
Date received by lab	10/25/11
Lab Job Number:	223071
Lab Sample Number:	814333

F-Factor Calculation (Indirect Preps Only):								
Fraction of printery filter used								
Total Resuspension Volums (nd)	)							
Votume Applied to secondary litter (ml)								

Analyzed by	-1K
Analysis date	10/25/11
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grki storage kication	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	mctures	Dimei	nsions	Identification	Mineral Class			".	1 = yes, blank = no		
		Туре	Primary	Total	Length	Width		Amphibola	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	KU-U	M		·				, , , , , , , , , , , , , , , , , , , ,						
	H4-4	M				Pr	er A	70/. Int	act	35	l. debris			
	64-4	M)				Pr	or B	NA						
	74-4	20		-				sen hu	en	10/25	/4			
	24-4	8						/	٠					
B	45-4	W							·					
	45-4	M												
	95-4	ND												
	F5-4	M												
	25-4	M									·			

#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

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sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

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The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm<sup>2</sup> clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration,  $s/cc = \frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{I}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{\text{i.t.}}{\text{i.000cc}}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening